

Complete.

The Iron Age

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Bonney

Reversing Rail-Mill Engines.

The annexed engraving, taken from the London *Engineer*, represents a pair of engines specially designed for rolling small sections of rails, designed and manufactured by Messrs. Davy Brothers, Sheffield, England, and intended to run at a high speed. The maximum speed will be about 150 revolutions and the piston speed about 1200 feet per minute. With this object all the bearings have large wearing surfaces, and the momentum of the working parts is carefully counterpoised by balance weights secured by straps to the webs of the cranks. The cylinders are 36 inches in diameter, and have a stroke of 4 feet; they are fitted with slide-valves having the pressure partially removed from the back by a balance piston, and are worked by eccentrics in connection with a link of the Allan type. The reversing is effected

their product is the source of all controversies or arguments as regards the consumers when describing the situation. These mines can be truly called the bonanzas of this country, and are exceptions to the general conditions of the iron mines in general, and can be said to occupy the same position here as does the Calumet and Hecla in the copper district. Where they can produce at a profit, the average hard-ore mines would be forced to lie idle for the lack of it.

These properties have without doubt been wrought with excellent results for the owners. They have wonderful deposits to begin with, any amount of capital at their back, and have adopted a thorough system of working—the result of years of careful study and costly experience. Were the price of ores depreciated until these mines could make a profit of but "10 per cent," as a prominent trade journal suggests, they would

that is annually done in these mines. There has never yet been a report of the cost of operating any of the large mines of this region sent to the State for circulation, and reports cannot state with any degree of accuracy what the sum would be. The mine owners are reticent on the subject, as is their privilege, but all declaim against the injustice done them by certain printed reports that militate against them and have already found a hearing before the Tariff Committee of the United States. A profit of 10 per cent. might satisfy the average merchant, who can figure pretty closely how his business will run for the year. The situation between him and the mine owner bears no similarity. The latter is taking many risks, and is ever contending with certain elements of chance not met with by the grocer, who buys his stock in the spring, turns it over in the summer and buys again in the fall. The miners have but one stock to sell from, and this is being lessened by thousands of tons each year. No ore is being replaced in the deposit.

The farmer sows and reaps and sows again, but the mine owner can but reap. When his stock is exhausted his business is lost. It is but a question of time when he will find the bottom of his mine and his business be at an end. Ten per cent., therefore, is not a fair compensation for him, nor would anything less than 30 per cent. be such, and this amount is certainly due him. He has chances which other business men do not meet, his principal is steadily decreasing, and time will deprive him entirely of both interest and principal, as the supply will ultimately cease. The manufacturer has no such risks to run, and should not reap profits greater than the actual capital interested should draw when placed in active use, such as is expected by the merchant of smaller means. With ore at its present price

which is furthest from the fireplace, and are brought forward by degrees; as the materials at the other end become hot and are taken out, the cold ones advance to the fire bridge, where they attain their proper heat. Thus, as soon as the removal of the hot blooms at one end has caused an empty space at the other, it is at once filled with cold materials, and thus the process goes on uninterruptedly

The Protection of the Forests.

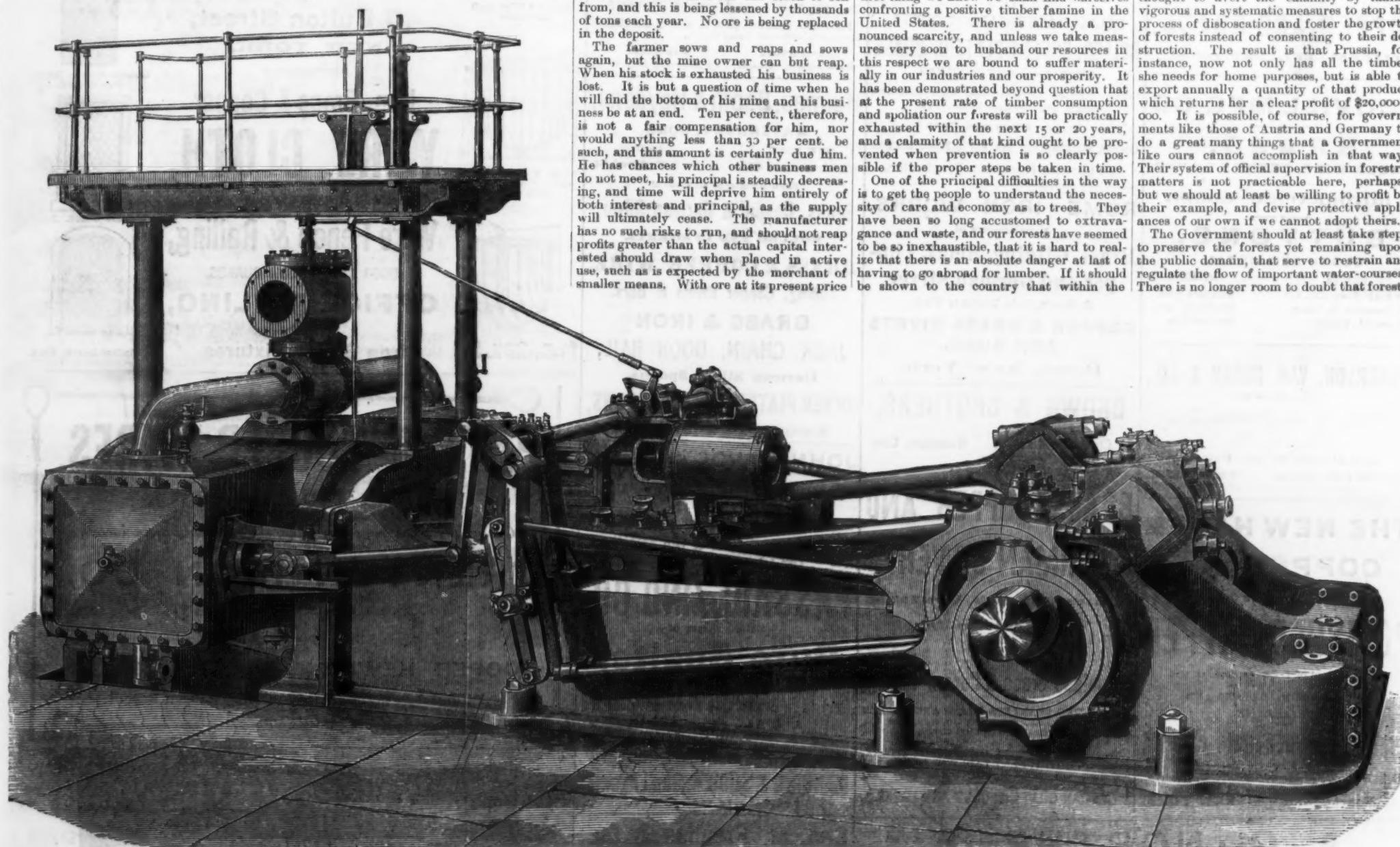
The discussion recently started in New York over the preservation of the Adirondack forests bids fair to serve a general good purpose by arousing popular interest in the matter of forest protection throughout the whole country. There is real and pressing need of serious thought upon this subject, as well as of early and effective action. The first thing we know we shall find ourselves confronting a positive timber famine in the United States. There is already a pronounced scarcity, and unless we take measures very soon to husband our resources in this respect we are bound to suffer materially in our industries and our prosperity. It has been demonstrated beyond question that at the present rate of timber consumption and spoliation our forests will be practically exhausted within the next 15 or 20 years, and a calamity of that kind ought to be prevented when prevention is so clearly possible if the proper steps be taken in time.

One of the principal difficulties in the way is to get the people to understand the necessity of care and economy as to trees. They have been so long accustomed to extravagance and waste, and our forests have seemed to be so inexhaustible, that it is hard to realize that there is an absolute danger at last of having to go abroad for lumber. If it should be shown to the country that within the

against a period of possible and logical scarcity. We are now at a point where this pernicious course must be speedily arrested and changed, or we shall soon be asking other nations to sell us lumber for the ordinary uses of manufacture and mechanical progress, to say nothing of the constant and growing demand on account of the necessities of building.

We can learn a valuable lesson in this matter by consulting the experiences of other and older nations. There was a time when Italy, Hungary, lower Spain and the best portions of Scotland were better supplied with forests than America has ever been, and they were practically ruined by permitting the surface of the country to be stripped of trees and made barren and desolate. Austria and Germany, too, were brought near to a similar condition in the same way, but they had sufficient forethought to avert the calamity by taking vigorous and systematic measures to stop the process of dislocation and foster the growth of forests instead of consenting to their destruction. The result is that Prussia, for instance, now not only has all the timber she needs for home purposes, but is able to export annually a quantity of that product which returns her a clear profit of \$20,000,000. It is possible, of course, for governments like those of Austria and Germany to do a great many things that a Government like ours cannot accomplish in that way. Their system of official supervision in forestry matters is not practicable here, perhaps, but we should at least be willing to profit by their example, and devise protective appliances of our own if we cannot adopt theirs.

The Government should at least take steps to preserve the forests yet remaining upon the public domain, that serve to restrain and regulate the flow of important water-courses. There is no longer room to doubt that forests



REVERSING RAIL-MILL ENGINES. (DAVY BROTHERS, SHEFFIELD, ENGLAND.)

by moving by hand the valve of a small auxiliary cylinder, so arranged that the piston cannot overrun, but follows exactly the movement of the hand lever. As will be seen from the engraving, the reversing lever, the steam-valve lever and the screw for opening the drain-cocks are all arranged on a platform elevated to a convenient height to allow the driver good sight of the rolls. These engines have recently been erected at the Blaenavon Steel Works, near Pontypool, Monmouthshire.

Lake Superior Iron Mine Profits.

An excellent article on the profits of iron mining appeared in a recent issue of the *Ishepeming (Mich.) Agitator*, which we give below in full:

Our iron-ore men have made a liberal cut in prices of their product this season, and mill men yet argue that they must drop still lower in order to allow them to compete with foreign manufacture. Steel rails are being sold at \$35 per ton—a ruinously low figure, certainly—but this condition has not been rendered through the price of the raw material. Just what constitutes a fair percentage on capital employed in an iron mine is a point that would require much study and research to determine, and could be learned only by a thorough examination of the different properties, and even then but few could do the work intelligently, and these would not be managers of steel-rail manufacturers. One cannot take the Lake Superior or Republic, nor yet the Chapin, as a basis to figure from, yet in all instances

be the only ones in operation, or with a few other of the larger producers. All other fields would be forced to lie idle, as the natural and other advantages of these concerns would totally swamp all competitors. But how long would such a state of affairs last? These mines would be inadequate to supply the demand. Other sources would have to be called upon, and an advance in price would have to result in order to allow them a margin for their trouble, and the big mines would have to be given a corresponding raise. There have been thousands of reports made of the enormous profits being reaped by all the ore producers of this region, and the State offices appointed for the purpose of making honest statements of such matters has been one of the first in abusing the district by misrepresentation of the true state of affairs. Whether by reason of his ignorance or through a spirit of "personal interest" we need not say, but that such reports have been made generally conceded by iron-ore men of this peninsula. There are many important items of expense that these reports do not deal with that, when footed up, go a long way toward lowering the so-called "enormous profits."

All the statistician can see are the figures representing the mine's output, and he forms his own conclusion as to its cost of production, compares it with its marketable value, and forwards the balances for the State to sow broadcast to the world in the shape of printed reports full of errors and misrepresentation regarding the iron-ore industry. Such men do not stop to consider the cost of machinery, officers' salaries, fuel, steel tools, explosives, or have no idea of the dead work

more than one mine in this country has been compelled to shut down for no other reason than it could not produce at a profit. Many of these properties produced ore of fine quality, but could not market it at the current prices and come out even. The big mines can go yet lower with prices, no doubt, and break the backbone of the smaller producers, as well as that of every new district being opened up on these lakes, on this or the Canadian side, and may do it if they are forced; but there would have to be revolutions soon afterward in order to furnish consumers sufficient ore to keep their mills in operation. Our mining men have been grossly abused in regard to the profits they have made, and have good reason for feeling unpleasant about it.

Rolling Mills in Sweden.—Rolling mills, says the Glasgow *Gazette*, have, during the last few years, been set up in Sweden, where the blooms are, without reheating, rolled directly into wrought bars, which then serve partly for the manufacture of rod and wire iron and partly for the manufacture of the so-called cast steel; but in general the blooms are, after being shingled, allowed to cool completely before being reheated in separate furnaces. When the latter process has been effected the iron is drawn in the usual manner by means of hammers or rolls. The blooms are not piled, but each one is, at the smaller works, reheated by itself in so-called "rack-harder" or drawing-hearth; at all large works, however, gas reheating furnaces are now employed. The furnaces are very long, and the materials are placed in them cold at the end

next 15 or 20 years it would probably become impossible to raise a wheat crop or a corn crop sufficient to meet the domestic want, we may be sure it would cause national consternation and hasten general search for means of prevention, and yet the value of our forest product is annually of more value than any crop yielded by agriculture. The raw material turned out each year in the shape of logs and lumber is placed at the enormous sum of \$800,000,000, while the number of persons who find employment in gathering and applying it exceeds a million. This does not make account, either, of what is used by the railroads for ties and similar purposes, an amount estimated to equal each year the total product of 68,000 acres of the best woodlands.

The practice of destroying young trees in order to utilize the land for grain raising still goes on, despite the fact that such lands are worth more with the trees left standing, and would in the long run yield a better return than can possibly be obtained by cultivation. We still use large quantities of wood for fuel, notwithstanding our abundant and easily available deposits of coal of every grade. In the mining regions enough trees are annually felled and wasted to approximate closely the value of all the ore taken out of the earth. In a general way, we take less thought, perhaps, of the value and utility of forests than of anything else that grows. The philosophy of civilization on this continent has been to regard trees as hindrances and incumbrances, to be disposed of as rapidly as possible, rather than as so much definite wealth, to be used carefully and preserved

exert a beneficial influence in this respect. It has been demonstrated past all controversy that where the country adjacent to streams of any considerable size is denuded of trees, there floods are to be expected, and farms and homes are liable to annual misfortune. In the extreme western portions of the country, where agriculture, not to say civilization itself, depends upon irrigation, it is supremely important that the lands along the streams be protected from sudden and disastrous overflow. It is urged by those best acquainted with the subject that all Government forest lands, which are so located as to answer the purpose of governing the action of streams adapted to the necessities of irrigation, should be permanently withdrawn from market and kept free from occupation. This proposition is limited, however, and does not reach the seat of the trouble. There should be a general effort on the part of the States to protect the forests within their jurisdiction, and the people should lend assistance in every way to the preservation of trees not imperatively required for present use, taking care at the same time to plant at least two new ones for every one that has to be destroyed.

The *Engineer* gives an account of some recent improvements in the Westinghouse air-pump, from the designs of an English railway superintendent. The improvements consist in a more extensive use of the compressed air, which, besides being used in the application of brakes, is made to reverse the engine by means of a small auxiliary cylinder, and also to run the feed-pump.

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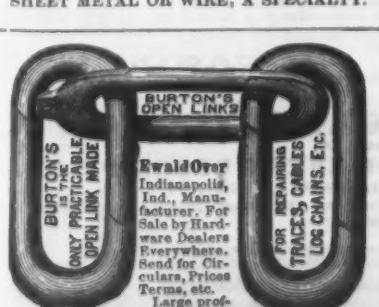
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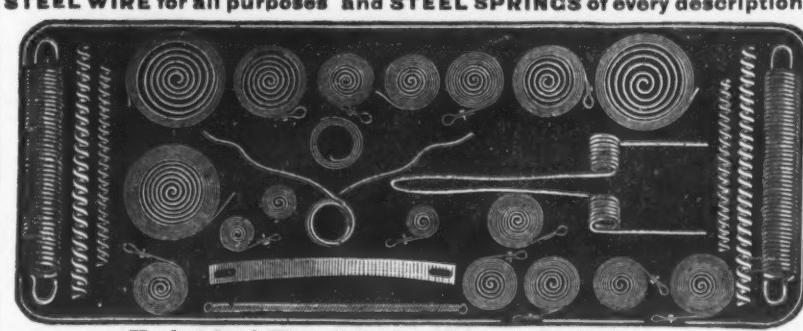
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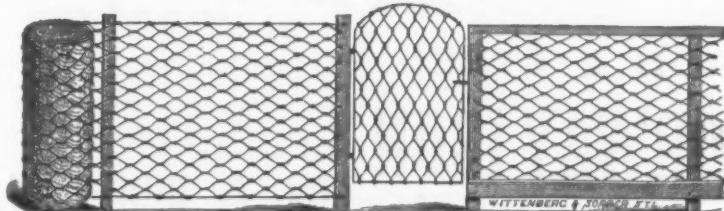
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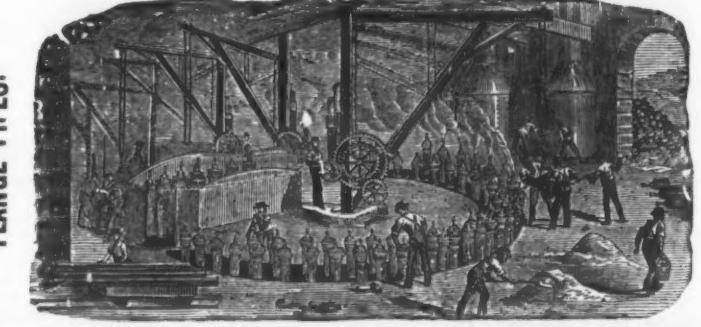
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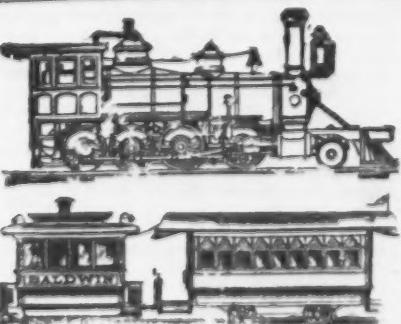
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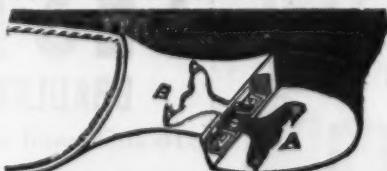
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arise. Considering these facts, the importance of the matter may be readily estimated. The author has had an experience of some 16 years in the patent business, and may well be regarded as an authority in matters pertaining to the subject.

Annual Review of the British Iron and Steel Trades for 1883.

(From Our English Correspondent.)

The year 1883 has in many of its aspects been peculiar, as regards the British iron and steel trades and the nearly allied industries. Almost from its commencement to its end there have been complaints of the dull state of business and of the poverty of prices; yet the majority of the works have been well employed throughout, and in many of them the turnover has reached a more considerable aggregate than might have been supposed to have been possible under such circumstances. Much of the work done has been on export account, as is demonstrated by the returns of the Board of Trade, and the large volume of shipping business is unquestionably attributable to the low selling values which have prevailed during the whole of the 12 months. As a matter of fact, quotations have been lower, in respect of many standard lines of iron and steel products, than ever known; yet it is worthy of notice that the number of failures in these great industries has been fewer rather than more numerous than in previous years. Two prime causes have doubtless led to this by no means unfavorable result, one being the repression of rash speculation, owing to the constant tendency of the market in the direction of weakness, and the other the circumstance that the general standard of values has fallen so steadily that the speculators and even many of the producers have not recognized the fact in time to take full advantage of its existence and incidence. That there has been much less speculation in iron and steel during 1883 than in many former years is beyond question, neither Glasgow nor any other leading center having had anything like a real "boom" throughout the whole of the period now under review. That the standard of values has also gradually decreased is also plain, as is patent when it is remembered that the selling prices to-day of many standard articles, such as Scotch warrants, Cleveland pig iron, hematite pig iron, common bar iron, Bessemer blooms, steel rails, &c., are materially below the limits formerly assigned as being the *minima* at which it was possible to vend these goods without incurring a positive loss. Thus, Scotch warrants were deemed at their lowest when the quotation was 45/-, yet they have recently touched 43/5; Cleveland No. 3 was esteemed at its minimum at 39/-, yet it is now being sold below 37/-; hematite pigs were thought to be at cost at 50/-, yet they are changing hands at 46/-, and so on almost ad infinitum.

First Quarter.

This year opened very quietly indeed in the iron trade, and so offered a marked contrast to the beginning of 1882, when matters were in a firm and buoyant condition. Last January there were rumors of an early drop in pig iron, but the Midland ironmasters declared that the higher rates of wages inaugurated with the commencement of the year would prevent any fall in values. The result proved that there was a gradual shrinkage of values, owing to circumstances over which producers had no control, simply by reason of the want of harmony between supply and demand. Scotch warrants stood at 49/-, Gartsherrie No. 1 being 64/6; Coltness, 67/6; Glengarnock, 56/-; and Eglington, 51/. Middlesbrough No. 3 was 42/6 at 43/6, and mixed lots of West Coast hematites were quoted at 51/- at 53/- in both districts, with a very limited amount of new business in hand. The larger iron and steel works throughout the country had finished up the old year in good style and had carried forward reserves of orders, which they estimated would in many instances provide work for several months ahead. In the hardware industries there was also a moderate surplusage of work from 1882, so that the outlook was believed to be of a tolerably encouraging nature. The tin-plate trade was somewhat unsettled by the then recent failures, yet these stoppages had brought about a limitation of the production, and had, therefore, led to the hope that prices would improve from the 16. 6 at 16/9 then quoted for ordinary I. C. cokes. So soon as business had been fairly started for the year a certain amount of vacillation was apparent in several branches of the iron trade, especially as conflicting views prevailed as to the probable course of prices at the quarterly meetings of the trade. As a matter of history, however, these gatherings produced no official changes, besides which they failed to yield more than quite an ordinary turnover. Lilleshall pigs were nominally firm at 90/- for cold-blast and 70/- for hot-blast, but both quotations were "shaded" to the extent of 5/-—just as were the pigs of Lord Dudley and other leading Staffordshire and Shropshire smelters. Common Staffordshire pigs were 65/- at 67/6; hydrate, 62/6; all mine, 65/6, and cinder, 40/- at 42/6 1/2 ton, while Derbyshire and Northamptonshire brands stood at 47/6 at 50/-, at which rates several thousand tons changed hands at the Birmingham meetings. Marked bars were irregular at £8 and £7. 10/-; good medium at £7; ordinary, £6 at £6. 10/-, and common Welsh at £5. 10/- at £5. 15/-. Tank and boiler plates were called £8. 10/-; ordinary sheets, £8 at £8. 5/- for singles; hoops, £6. 10/- at £7, and tube strips, £6. 12/6 at £6. 15/-. For galvanized iron, £13. 10/- at £14. 10/- were the rates for 24 w. g. in bundles. All these prices were more or less nominal, however, and it was an open secret that such transactions as took place about this time were negotiated at somewhat lower rates. In Scotland warrants receded to 43/4, despite the fact that reports from the United States even then began to lend support to the idea that the tariff would be lowered to an extent which would probably lead to augmented exports from Great Britain to that country. The "free ship" resolution of Congress was especially adduced in support of that contention, and the speculators at Glasgow worked

up a little spurt on the strength of the announcement; but the public were slow—a disposition shown, it may be remarked, throughout the whole of the year. Toward the middle of January there were new signs of demoralization in fencing wire and galvanized iron, while tubes were a good deal "cut up" by rivalry, which shortly led to an increase in discounts of 2 1/2%. Old rails were dull, with only small stocks available, while steel rails were very quiet in the open market at £4. 12/6 @ £4. 15/6 ton on the West and East coasts, and some 7/6 @ 10/- higher in South Wales, where the mills were better off for orders. The month closed very quietly indeed, despite the reduction of the bank rate on January 25 from 5 to 4 1/2%.

Early in February the price of marked bars was made uniform at £7. 10/-, owing to a reduction of 10/- by makers who had taken independent action on a former occasion. This change was taken to be an indication of a weak demand for the better kinds of bars, an inference which was doubtless well founded. The producers of medium and common bars met the situation by slightly lowering their own prices. In the steel-rail trade a certain addition of strength was caused by the giving out of an order for 72,000 tons of rails, with long forward deliveries. All the principal concerns were then said to be fully engaged. Pig Iron remained dull and in slow request, Scotch warrants going down to 47/3, while Cleveland No. 3 decreased to 41/6, and mixed lots of West Coast hematites were sold at 51/- 1/2 ton. The Board of Trade returns for January showed a smaller comparative shipping business in iron and steel, and thus assisted in depressing the market. As the month drew to a close the feeling of quietude was intensified, and values further fell away, notwithstanding the circulation of rumors touching alleged inquiries for large lots of iron, &c., and despite the circumstance that the volume of production continued large in almost all departments of the metallurgical industries.

March opened with fine, alit cold, weather and the bank rate was reduced to 3%. A somewhat more hopeful tone pervaded the trade, a tone which was fairly indicated by an official report of the Wolverhampton Chamber of Commerce speaking of "a very substantial increase in foreign trade," even with the drawback of low prices. In the early part of the month all speculations as to the outcome of the legislative discussions of the United States tariff were set at rest by the announcement that the bill had been passed, and that it provided for considerable reductions in the duties on iron, steel rails, wire, metals, &c. It was thought that the change would be in some respects likely to afford openings for renewed importations of British manufactured, as well as crude, iron. That this view was taken on the other side of the Atlantic as well as here was promptly demonstrated by the circumstance that numerous cablegrams at once came to hand asking for quotations, while many British producers showed their appreciation of the possibilities thus opened out by dispatching travelers to the United States. On the other hand, it was contended that the changes were not really so favorable as some of them seemed to be, and it was predicted by many well-informed persons that the general result would be found to be disappointing. Writing now, several months after the coming into force of the new tariff, we are enabled to perceive that each of these views was justifiable and sound. In some lines of materials an increased business has resulted, while in others the outcome has not been at all equal to expectations. That the matter is still unsettled and unsatisfactory to the public of the States, however, is so patent that there is every probability of a further change being effected in the next session of Congress. At the time now under review this had not been demonstrated, and there was much vacillation as to what might occur, and to a certain extent our market was buoyed up by a contemplation of these contingencies. By this time, also, the worst part of the winter had been got over, and the weather, although cold, was sufficiently fine and free from excessive rains to materially brighten the agricultural outlook. In some departments of the iron trade the period specially under notice seems to have been signalized by a slight accession of strength, particularly in respect of ship plates, new orders for over 30,000 tons having been placed on the Clyde alone, besides other contracts elsewhere. Pig iron values did not improve, nevertheless, Scotch warrants being flat at 47/6, and Cleveland No. 3 at 40/9 1/2 ton.

Second Quarter.

April opened with continued fine weather and with sunny days, which caused vegetation to progress rapidly, despite very cold nights and east winds. The spring trade in hardware and similar goods was very late, and was consequently somewhat more concentrated than usual, while some portion of it was probably lost altogether, owing to the backwardness of the season in March. In the iron trade quietude was the rule in the open markets, but the majority of the works remained well employed, and it was plain (as it has been many times of late) that the volume of trade was good in the aggregate, even though values were low and competition severe. Early in the month warrants at Glasgow fell to 40/10 @ 47/6, while Middlesbrough No. 3 stood at 40/10 @ 40/6, and mixed lots of West Coast hematite pigs at 51/- at 52/6 1/2 ton. The Board of Trade returns for March again showed a comparative decrease in the exports of iron and steel, but a capital and augmented turnover in steam engines and other machinery. The quarterly meetings of the ironmasters again gave rise to no official alterations in the prices of finished iron. At the Middlesbrough meeting ship plates were £6. 5/- @ £6. 10/-; angles, £5. 15/-; common bars, £5. 17. 6 @ £6, and puddled bars, £5. 15/-. At Wolverhampton there was a good attendance, but no weight of iron changed hands. The Lilleshall (Shropshire) Iron Company quoted hot-blast all-mine pigs at 65/6, and cold-blast at 85/6. Stocks of pig iron were said to be increasing in the yards of Staffordshire smelters, who quoted part-mine pigs at 45/- at 50/-, and cinder qualities at 37/6 at 38/9 1/2 ton. Lincolnshire, Derbyshire and Northamptonshire pigs were sold at 47/6 @ 48/-. At Birmingham the meeting was large, but not beyond an ordinary average in point

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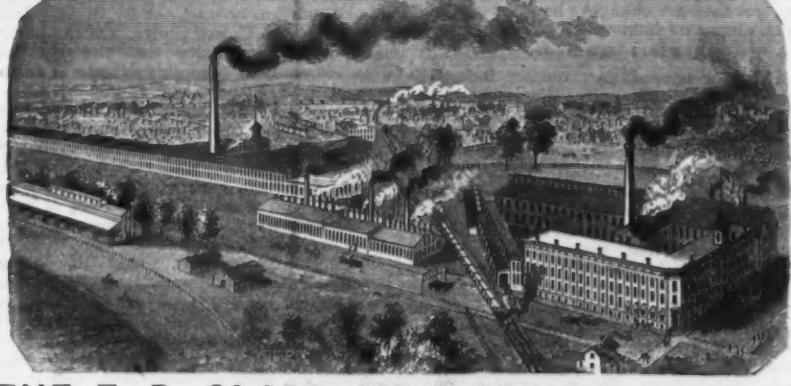
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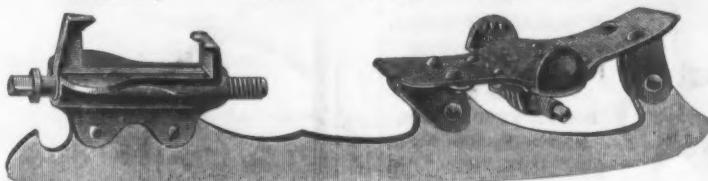
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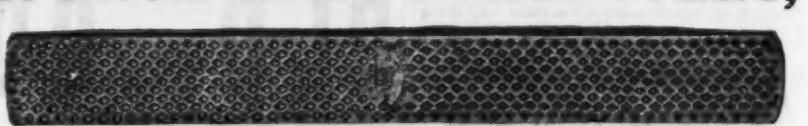


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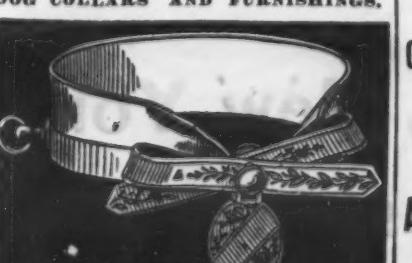
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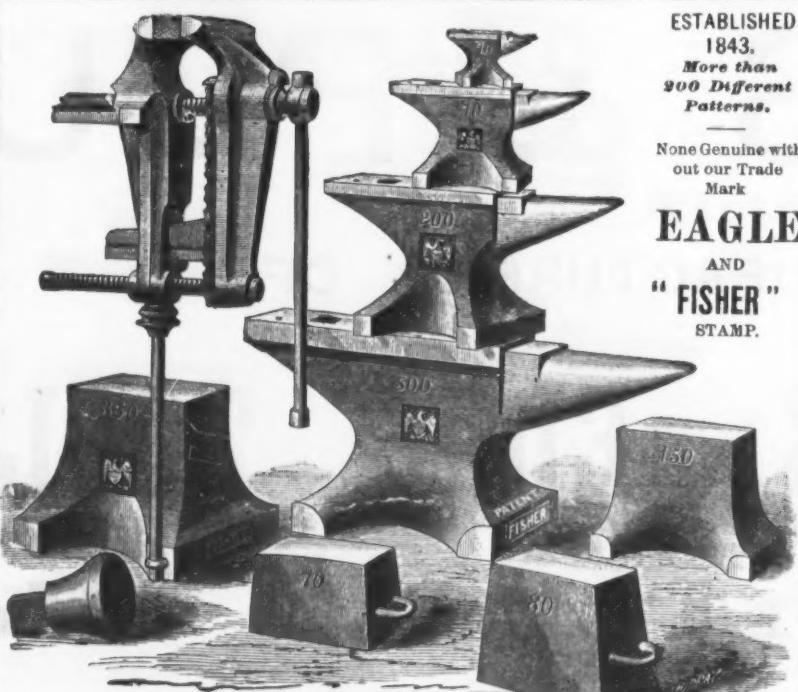
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of numbers, while buying was on a limited scale. Finished-iron prices, both at Wolverhampton and Birmingham, were unaltered on the basis of £7. 10/- for marked bars and £8. 2/6 for Lord Dudley's Round Oak bars. Plates were about £9; hoops, £6. 10/- @ £7; nail strip and gas-tube strip, £6. 5/- @ £6. 7/6 at works, and sheets at £7. 10/- @ £10 for singles, doubles and trebles. Some of the Liverpool agents spoke of their possessing American specifications for large lots of iron, particularly plain and galvanized sheets, wire rods and hoop iron, to be shipped toward the end of June, but the orders were understood to be withheld. For medium and common iron prices were extremely irregular and low. Lord Dudley and Noah Hingley & Sons were said to have respectable United States orders in hand. The Galvanized-Iron Manufacturers' Association made no change in prices, and business was generally reported dull, although one firm was stated to be working full time. No. 24 gauge galvanized sheets, in bundles, were as low as £13, f.o.b. London or Liverpool. The iron-tube manufacturers, at their meeting, discussed the question of restricting the production, as also did the galvanized-iron producers, but did not arrive at any definite decision. The cut-nail manufacturers reported more business, but no improvement in selling values. The tin-plate manufacturers' meeting was poorly attended, and its tone was anything but hopeful. It was shown that the make had been reduced by 100,000 boxes, yet the supply was more than equal to the demand, and prices were not more than 15/9 @ 16/- for I. C. coke; charcoal, 18/- @ 10/-, and steel sheets, 18. 6. In the Cleveland districts a further restriction of the make of pig iron was talked of, but nothing definite was done. In the Northern manufactured-iron trade, on the contrary, the men were ardent advocates of the policy of restriction, and the employers agreed to limit the production to the extent of one ton per fortnight, which arrangement has been continued during the greater part of the year since April. The probabilities of increased business with the United States continued to be keenly discussed, but the more sanguine of the anticipations formed were damped by the announcements received as to the reduced prices put forward by the American manufacturers in all the lines of goods affected by the tariff changes. In other instances there was a compulsory suspense, owing to the then uncertainty as to the interpretation of the new law to be taken by the American customs officials. In the steel-rail trade some of the leading concerns about this time announced reductions of wages, and the West Coast smelters resolved to limit the output "very considerably," the latter resolution having been left in rather general terms ever since. Thus April closed with no material alteration of the situation in any branch of our metallurgical industries.

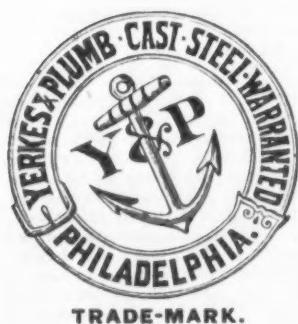
May came in quietly, and with many complaints of the want of speculative activity which had been characteristic of the whole of the preceding months of the year. Money was plentiful, but the spirit of enterprise appeared to be dead, and there was a general tendency to proceed cautiously in all departments of trade and commerce. The iron market formed no exception to the general rule, crude iron being heavy (perhaps owing to the heavy stocks held in Glasgow and elsewhere), and all other sorts slow of sale at prices much cut up. Some little excitement was caused by the threatened strike of 100,000 ironworkers in Pennsylvania, but this dispute, we now know, was of no benefit to the British iron trade. Shipments of pig iron were very good, as they had been, indeed, all the year, but the Board of Trade returns for April again showed a comparative decrease in the exports of iron and steel on the whole. The Whitsuntide holidays were characterized by splendid weather, which not only prolonged the holidays, but also further strengthened the outlook as regards farming operations. Scotch warrants gained £8. 7/6 @ £8. 10/- for doubles, and £9. 7/6 @ £9. 12/5 for lattens. Makers of best thin sheets reported a good demand, and E. P. & W. Baldwin quoted their "Severn" singles, if supplied to consumers, at £11 and upward; B quality, £12.; and BB quality, £13 1/2 ton. Plates were £9. 10/- 1/2 ton for ordinary descriptions, and £9. @ £9. 10/- for boiler sorts. There was no concert among the makers of second-class iron; but, in spite of the declared reduction in wages, quotations ruled somewhat higher than during last month, and it was difficult to obtain common bars under £6. Large quantities of angle iron for the use of the safe and bedstead makers were ordered from Yorkshire houses, and hoop-iron specifications for the United States were secured by the North Staffordshire makers. The galvanized-sheet trade was in a more healthy state than it had been for some time before. The tin-plate trade was more cheerful than on the previous quarter-day, though prices showed little improvement at 16/- or so for I. C. cokes. At the quarterly meeting of the Wrought-Iron Tube Makers' Association there was a good attendance, the Scotch as well as the English houses being represented. It was determined that the discounts on gas, water, steam and boiler tubes for the ensuing quarter should remain unchanged; further, that the existing restriction of make should be continued—i.e., as to all but the boiler-tube works, four days' work a week. Soon after the quarterly meetings a welcome accession of business was reported in some quarters, and an impression was formed that the trade was about to undergo an expansion. Even the strike in Staffordshire did not wholly counteract this hopeful feeling, which was, on the other hand, encouraged by the receipt of better advices from the Continent and from the United States. The views of the optimists were not realized to any material extent, however, home prospects being interfered with by broken weather, and the foreign outlook unsettled by the Suez Canal irritation, as well as by the uneasiness of the French and their warlike enterprise in Madagascar, Tonquin, &c. These causes combined caused a slight reaction, and the month ended with Scotch warrants at 47 1/2 @ 47 1/3; Middlesboro' No. 3, 39 3/4 @ 39 1/2; West Coast mixed lots, 49/; and other brands pro rata. The return of the sworn accountant of the Northern Board of Arbitration for the three months ended June

less serious than in some of the earlier months of the year, while the engineering branches still kept up to a high standard. As the month approached its termination, some of the producers of iron made a gallant effort to obtain slightly higher prices, the change being more especially noticeable as regards sheets, but other kinds of iron were here and there quoted "without engagement," and some of the makers affected a belief in a higher range of values at the July quarterly meetings.

Third Quarter.

July began in the midst of a splendid spell of fine weather, the thermometer running into the 80's on several days. The cereal crops looked well, and the hay was got in in many parts of the country in good condition, besides being exceptionally heavy as to quantity. The capital farming outlook caused the second half of the year to open fairly well, the belief in a good corn harvest and the actual realization of the grass crops having promoted a better circulation of money in the home markets. The iron market seemed to share in this tentative improvement to a certain extent, Scotch warrants reaching 47 3/4 @ 47 4/4, and Middlesboro' No. 3 being rather stronger at 39 1/2 @ 39 1/6. The sale of sheets was larger, some of the producers being said to have refused orders at the prices of a month or six weeks earlier. For hoops, also, rather more money was asked, and in some instances obtained. The Cleveland ironmasters, after fully discussing the question of restriction, arrived at the conclusion not to blow out any more furnaces, thus virtually continuing the former rate of production. The second week of the month brought broken weather, with thunderstorms and rains, which interfered with the crops and literally damped the prospects of the agriculturists. Concurrently, a large number of the ironworkers of South Staffordshire came out on strike for an advance in wages of 6d. 1/2 ton, which their employers declined to concede. It is a matter of almost contemporary record that the men behaved very badly indeed in this matter, and that, after indulging in riots and wanton destruction of plant and property, they resumed operations without having attained the prime object of their foolish action. At the time the strike had the effect of hardening the iron market, Scotch warrants going up to 47 8/ and Scotch makers' brands being advanced by 1/ to 1/6 1/2 ton. Similarly, the Cleveland ironmasters were firm at 39 1/2 @ 39/ for No. 3 and declined to sell far ahead. The latter makers were understood to have booked a good accession of orders, while more encouraging reports from the United States tended to strengthen Scotch quotations. Even hematite pigs—under a cloud almost all this year—were a shade firmer on the strength of good home sales. At the quarterly meetings the leading topic of conversation was the strike and its possibilities, actual business being greatly hampered thereby. The producers of best pig iron followed the lead of the Lillehall Company, who declared afresh their prices—62 1/2 @ 65/- for all-mine hotblast pigs, and 82 1/2 @ 85/- for cold-blown. Scarcely anything was done in these brands. Staffordshire cinder pigs remained at 40/-; part mine, 45/- @ 50/-; hydrates, 60/-; while Derbyshire sorts were 47 1/2 @ 49/; and Northampton, 45/- and upward. Thorncliffe pigs were about 60/. A fair number of inquiries were on the market for manufactured iron, but makers were unable to book, the idleness of the mills and forges precluding promises of delivery. Earl Dudley's bars remained at £8. 2/6, and the bars of the other "list" houses at £7. 10/-. Bars made by firms of good reputation stood at £7, and common bars varied from £6. 10/- to £6. 5/-. Hoops were £6. 12/6 @ £6. 15, and gas strip, £6. 7/6 upward. If they had been in a position to execute orders, the sheet makers might have done a good business, since there were plenty of inquiries for that description of iron. There were not sufficient transactions to really test prices, but they were nominally £8. 7/6 @ £8. 10/- for doubles, and £9. 7/6 @ £9. 12/5 for lattens. Makers of best thin sheets reported a good demand, and E. P. & W. Baldwin quoted their "Severn" singles, if supplied to consumers, at £11 and upward; B quality, £12.; and BB quality, £13 1/2 ton. 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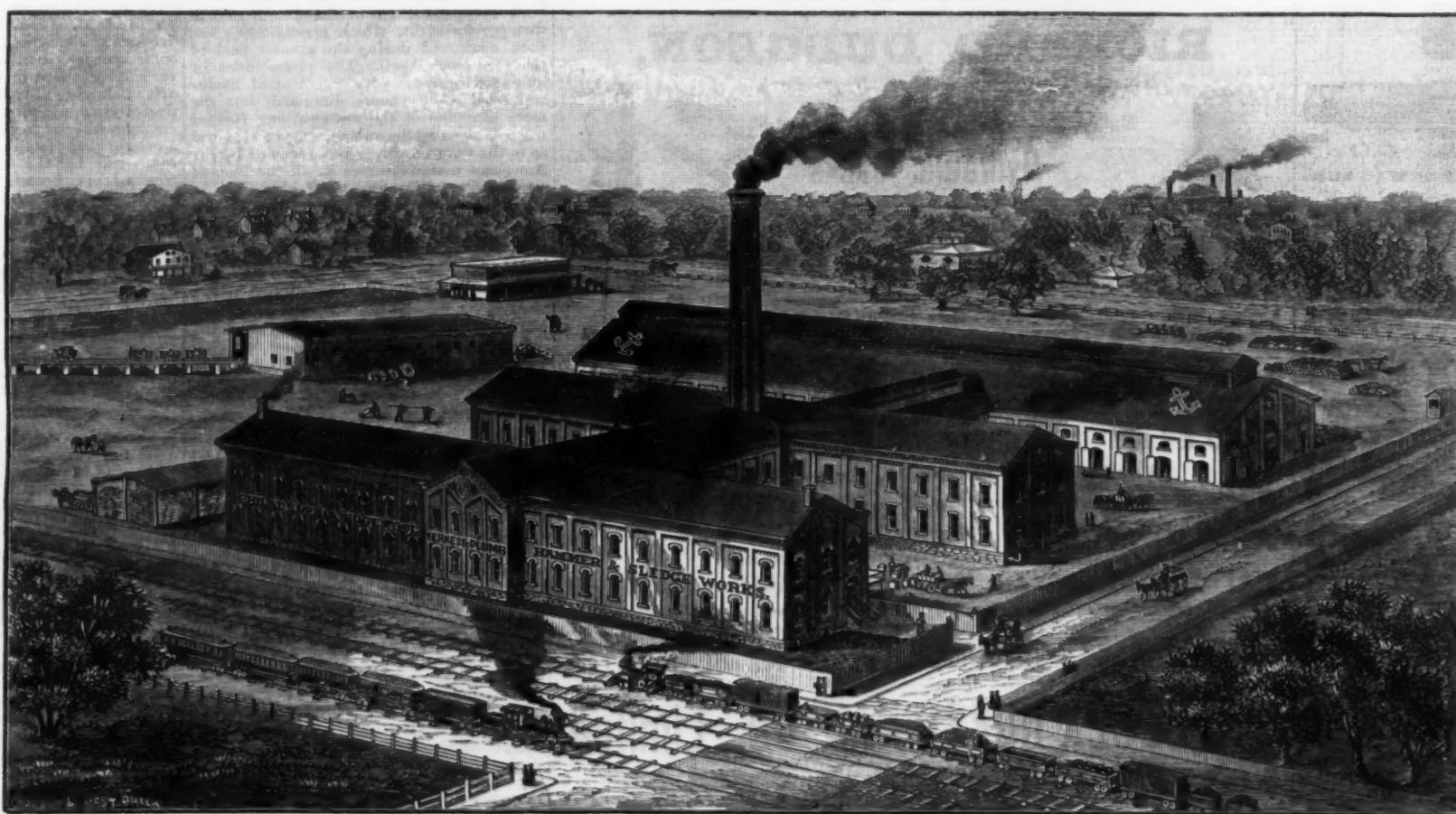
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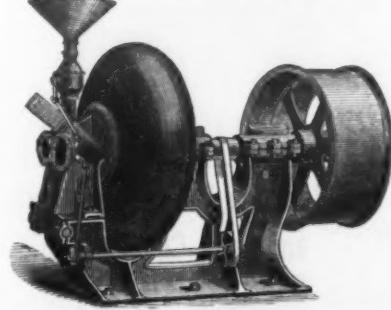


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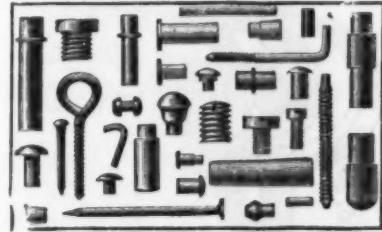
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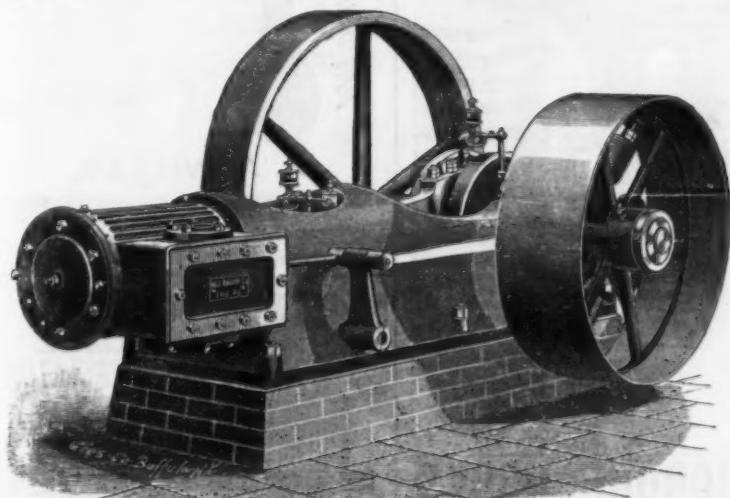
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30 showed that the net average selling price of iron rails was £5. 16/1; plates, £6. 6/0; bars, £6. 7/7, and angles, £5. 13/11. The production of plates during the quarter was nearly 67 %, and of angles over 20 %, of the total output of the locality—figures which forcibly demonstrate the value of the shipbuilding demand for iron to the North of

England. August inaugurated the usual holiday season, and was in that sense on all-fours with the same month of recent years. The weather was generally showery during the first week or so, but a period of heat supervened subsequently, and over a large portion of the southern and northeastern counties the cereal crops were harvested in capital condition, the oats and barley being more than an average, and the wheat better in point of quantity and quality than for several years. Generally, therefore, the outlook appeared to be better, mainly on the strength of the favorable harvest reports. Scotch warrants gained in value, and Scotch makers' brands of pig iron were augmented by 6d. @ 1/7 ton. At the same time it was noted that warrants were about 3/ below the price of the same date of 1882, and makers' brands proportionately cheaper, while the stocks were much heavier on the former occasion. On all sides, however, there was no confidence in the likelihood of values being enhanced or even sustained, and the collapse of the strike in Staffordshire was not calculated to encourage optimistic views. In the second week of the month some sensation was created in the rail trade by the announcement that 80,000 tons had been booked for India at £4 1/2 ton. This report appears to have originated in Belgium. It was denied here without delay, the firm mentioned as having undertaken the contract categorically denying the imputation. It was known, however, that prices had fallen off very considerably, and there were not wanting those who held to the belief that "where there was so much smoke there must be some fire." The Board of Trade returns for July were once more unfavorable as regards the exports of iron and steel, and assisted the views of the "bears," as also did the returns of the Cleveland ironmasters. In no case was crude iron other than flat, owing to the accumulation of evidence as to the decreased demand for new iron ships. The yards were fairly busy, but then, as now, orders were few and far between, and the unusual spectacle of empty slips began to fill both builders and ironmasters with apprehensions for the future. Since the period more particularly under notice, mere conjecture has grown into certainty, and the collapse of shipbuilding has done more than anything else to depress the values of almost all kinds of iron. As regards iron plates, there were again complaints of overproduction and of unnecessary competition. Best charcoals were 10/6 @ 21/; best cokes, 17/6 @ 18/; and common cokes, 16/ @ 16/6, all for I. C., while wasters were rather scarce and firm at 14/9 @ 15/3, according to sizes, &c. The month closed with very fine weather. It was shown by the returns of the British Iron Trade Association that the make of pig iron during the first half of the year had been 4,138,225 tons, as against 4,241,245 tons in the first half of 1882. The stocks held on June 30 were set down as being 1,315,775 tons, as compared with 1,368,854 tons at the end of 1882, or a decrease of about 53,000 tons.

The incoming of September was signaled by a gale almost reaching the force of a hurricane, which on September 2 swept over almost the whole of Western Europe, and did a great deal of damage to the fruit crop, hops, vines and such of the cereals as had not been ingathered. This occurrence, although not by any means momentous, had a bad effect in the farming districts, and for that and sundry other reasons which in more prosperous times might be passed almost unnoticed, the iron market remained very flat. It was observed that coal was in some cases being advanced by 6d. @ 1/7 ton, but the ironmasters were unable to utilize the circumstance to advantage, and all quotations were irregular and quite nominal. Sheets were in most request among ordinary finished iron, and old rails sold freely for Italy. Scotch warrants stood at about 46/3; Coltness No. 1 at 59/; Langloan, 59/; Gartsherrie, 56/; Glengarnock, 55/; and Eglington 48/, while Middleboro' No. 3 was 38/9 @ 39/3, and hematite pigs 40/ for mixed lots in usual proportions. Tin plates now experienced an upward movement, and a large turnover was effected both in primes and wasters at 3d. @ 6d. 1/2 box more than the quotations of the middle of August. The autumn meeting of the Iron and Steel Institute at Middlesboro' was a great success, but was marred by a serious accident at the new Bessemer pit of the Northeastern Steel Works. By some mishap the molten contents of a ladle were upset and a large number of workmen scalded. A visitor, Mr. Davidson, of the Horbury Junction Iron Works, near Wakefield, sustained injuries of so dreadful a nature that he died within a few hours. Suitable votes of condolence were accorded by the Institute, and a subscription for the family of the deceased subsequently received substantial support. In all departments of the iron trade values were almost unaltered and a quiet tone prevailed, but the works were for the most part fairly engaged. In Welsh bars good Indian assortments were purchased, and shipments generally were pretty well sustained. Tin plates sold more freely, and what proved to be an abnormal demand set in for wasters.

Fourth Quarter.

October came in amidst broken weather and with the quietude in the iron market which is a customary feature at the end of the quarter. The miners had just initiated an agitation for a general advance in wages of 15 %. They passed a resolution to that effect, and then adjourned their conference "to see how the matter was taken by the country generally." Being blind, they seem to have mistaken the signs of the times, for, as we now know, they pursued their agitation up to the very last moment, and then abandoned the object they had in view for so long a time. The official accountants of the South Staffordshire Mill and Forge Wages Board certified the average selling price of bar iron by 12 selected firms during the three months ended August 31 to have

been £6. 15/7 1/2 ton, or 4d. more than in the previous quarter. This would have left wages unaltered had not the men given notice to terminate the sliding scale. Puddlers' wages remained at 7/6 1/2 ton, as before. The accountant of the Northern Board of Arbitration certified the average net selling prices for the two months ending with August to have been: Rails, £5. 15/10; plates, £6. 5/; bars, £6. 4/6, and angles, £5. 12/5 1/2 ton. The general average was £6. 2/4, which gave 7/ as the rate to be paid for puddling from October 1 to November 24, and reduced forge and mill wages by 7 1/2 %. The men objected to this reversion, and gave notice to terminate the sliding scale in December, while the employers, on their part, notified return to the practice of making 11 turns per 14 days after December 29. In South Wales and Monmouthshire notices were given to the steel-works operatives of a reduction of about 10 %. These changes were significant of the growing dullness of the metallurgical industries, and they also gave rise to some trouble with sections of the workmen, thereby to some extent hampering the course of trade. In Wales and Monmouthshire about 15,000 men employed at the iron and steel works went out on strike, but resumed under protest, owing to the statement of the employers that they must either reduce wages or close their works. In South Staffordshire a compromise was arrived at under which wages were to remain unchanged until the end of 1883. The Northern ironworkers accepted a drop of 9/ 1/2 ton for puddling and 7 1/2 % on mill and forge wages for a period of two months, a revision to be made if ascertained facts should favor any change in either direction. From the United States news was cabled of a drop of \$1 1/2 ton in native pigs, but the change had little effect here, owing to the limited transactions on American account in that class of iron. The Board of Trade returns for September were again unfavorable in some respects, but still afforded convincing evidence of the good export business in engines and machinery in general. In Scotland a partial strike of miners and the stoppage of several furnaces led to more numerous speculative purchases, but makers' quotations did not improve. At Middlesboro' No. 3 was 38/9 @ 39/ with futures weak and irregular. The quarterly meetings were well attended, especially that at Birmingham, where the bulk of the business actually negotiated was transacted. Lillehall hot-blast pigs were 62/6 @ 65/; and cold-blast, 68/6 @ 85/; Staffordshire all-mine hot-blast, 60/; hemispheres, delivered in Staffordshire from the West Coast or South Wales, 58/6 @ 62/; Staffordshire hydrates, 60/; mine, 52/6; common cinder, 40/ @ 42/6; Lincolnshire, 50/; common Lancashire, 50/; North Staffordshire all-mine, 50/; Derbyshire, 45/ @ 50/; Northamptonshire, 46/ @ 47/6, and "Thorncliffe," South Yorkshire, 57/6 @ 60/; all 1/2 ton in the district. The amount of business done in crude iron was moderate, buyers being unwilling to close except at lower rates, while the smelters declared they were well sold forward and would not ease their quotations. In finished iron the tone of the meeting was somewhat more satisfactory, although prices were not officially altered. Marked bars remained at £7. 10/ with £8. 2/6 for Lord Dudley's "Round Oak" iron. Common Welsh bars were a trifler firmer at £5. 6/3 @ £5. 7/6, and any quantity of respectable bars could have been obtained at £6. 5/ @ £7 1/2 ton. Hoops for export were called £6. 10/ with better sorts at £6. 17/6 @ £7. Gas and nail strips were £6. 5/ @ £6. 7/6, with a good call for the latter from Canada. Sheets were in improved request at £7. 15/ and upward for singles, £8. 5/ @ £8. 10/ for doubles, and £9. 5/ @ £9. 10/ for trebles or "lattens." For "Severn" singles, £11; Baldwin Wilden B, £12; BB, £13; BBB, £14; charcoal sheets, £16. 10/; best charcoal, £19. 10/; and E best charcoal, £21. 10/ were quoted. The plate rollers were quiet. In pig iron several lots of 500 and 1,000 tons "in a line" changed hands, and respectable orders were placed for sheets, tin plates, galvanized iron, &c. The galvanizers held their usual meeting and reported a considerable accession of orders. Owing to the firmness of spelter and sheet iron, the price of 24 and 22 common galvanized iron was fixed at £13. 10/ 1/2 ton, f.o.b. London, with extras for other gauges, packing, &c. At the meeting of the tin-plate manufacturers it was stated that stocks had decreased since January 1 by 250,000 boxes, and that the output appeared to be within the demand. Prices were firm at 16/3 @ 16/6 for coke I. C., and wasters at 15/6. The wire manufacturers of Warrington and Birmingham reduced their prices by 20/ 1/2 ton, owing to the pressure of Continental competition, favored by low through rates by the railway companies.

November came in very quietly, with no increase in the volume of actual business and no circumstances tending to the sustenance of selling prices, unless, indeed, the unseason of labor might be considered to have that effect. On the other hand, the Board of Trade returns for October showed a large falling-off in the exports of almost all kinds of iron and steel, and the current trade reports were all couched in discouraging terms. On November 9 the Scotch warrants touched 43/11 1/2 ton, and No. 3 Middlesboro' was offered at 37/9 @ 38/ during the same week. In the finished-iron trade there was a fair call reported for sheets and common Welsh bars, the former mostly for the use of the galvanizers and for working-up purposes, and the latter for the East Indies. There were reports of higher figures being asked for bars, hoops, &c., but it is very doubtful whether vendors really succeeded in inducing buyers to pay more money. Steel and steel rails were flat, and values of the latter were weak. Large orders were placed for the steel wire (as well as copper wire) needed in the construction of the new cables to be laid across the Atlantic, but as the specifications were remarkably stringent the competition was not general, and a portion of the order went to a German firm. With reference to the new standard wire gauge, a deputation from the sheet-iron manufacturers of South Staffordshire had an interview with the president of the Board of Trade on November 15, and set forth their reasons for dissenting from the application of the new gauge to flat metals. Mr. Chamberlain informed the deputation that they

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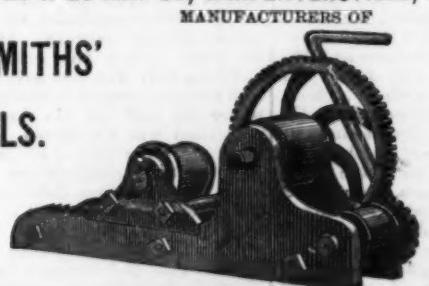
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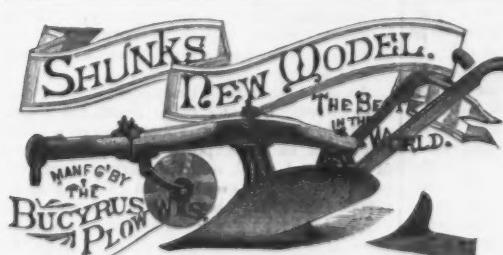
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July 27, 1880.

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We are prepared to make all kinds of Heavy or Medium Weight

STEEL CASTINGS FROM OPEN HEARTH METAL.

We wish to give special attention to making Cast Steel Rolls of all sizes, Mill Gearing wherever Cast Steel is suitable. Also Cranks, Cross Heads, Shafts, &c., for Steam and Blowing Engine construction.

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Is the best, cheapest and most complete Sash Holder and Lock in the market, and will think me the largest sale. It holds the window at any point, and locks the same when drawn, and positively prevents windows from rattling.

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is made entirely of metal occupies the same space as a globe valve. It has no plug or packing, and is a lock-up valve. Write for circular. Manufactured by

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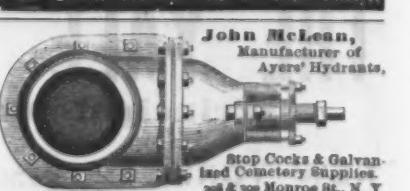
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These Mills will grind Raw Bones, green or dry ;
also Ores, Glass, Limestone, Clay—in fact, any-
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Vulcanized Rubber Fabrics ADAPTED TO MECHANICAL PURPOSES. RUBBER BELTING and PACKING.

Machine Belting,
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Piston Rod Packing,
Gaskets and Rings,



Vacuum Pump Valves,
Ball Valves,
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Billiard Cushions,
Emery Wheels.

This company manufactured the immense DRIVING and ELEVATOR BELTS for the Buckingham Armor, Dole & Co., of Chicago. Vanderbilt's Elevators for the U. S. Central & Hudson River R. R., the Pennsylvania, and many others; in fact, the largest Belts for the largest Elevators in the world.

A single carrier belt in the Penna. R. R. Elevator is over 2600 feet long, weighing 18,000 pounds, and has run perfectly from the start.

LINEN and COTTON HOSE.
Plain and Rubber Lined.

Circular Woven-Seamless Antiseptic RUBBER LINED "CABLE" HOSE and "TEST" HOSE, Vulcanized Para Rubber and Carbosil Duck, for the use of Steam and Hand Fire Engines, Force Pumps, Mills, Factories, Steamers, Ships, Hospitals, &c.

"TEST" HOSE.

Emery Wheels and Packing.
ORIGINAL

Solid Vulcanite EMERY WHEELS

LARGE WHEELS MADE ON CAST-IRON CENTER IF DESIRED.

Section of Emery Wheel showing Iron Center.

The properties of these Wheels are such that they can be used with great advantage and economy for cutting, grinding and finishing Wrought and Cast Iron, Chilled Iron, Hardened Steel, Sheet, Barbe, Glass, etc. These wheels are extensively used by manufacturers of Hardware, Cutlery, Edge Tools, Plows, Safes, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agricultural Implements, and small Machinery of almost every description.

Pat. Jan. 26, 1860.

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For Packing the Piston Rods & Valve Seats of Steam Engines & Pumps.

B represents that part of the packing which, when in use, is in contact with the piston rod.

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This Packing is made in lengths of about 20 feet, and of all sizes from $\frac{1}{4}$ to 2 inches square.

Corrugated Rubber Mats and Matting.

For Halls, Flooring, Stone and Iron Stairways, &c.

Rubber MAT

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For Halls, Flooring, Stone and Iron Stairways, &c.

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Warehouse, 13 & 15 Park Row (Opposite Astor House), New York.

JOHN H. CHEEVER, Treasurer.

Wares soon becomes brittle

and crumbles to pieces. Address

The most complete assortment in the U. S. of
Shank, Socket Firmer and Socket Framing Chisels.

PLANE IRONS.

CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by un-

authorized persons, who represent them as our make. Our tools are stamped "BUCK BROTHERS,"

and our labels have on our trade-mark also "Riverlin Works."

BUCK BROTHERS, Millbury, Mass.

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FOR
BEARINGS, SLIDE VALVES, CYLINDER RINGS,
CROSS-HEAD GIBBS, STEPS, BUSHINGS,
And all purposes where Maximum Durability, Anti-Frictional
and Non-Cutting Qualities are Desirable.

PUMP RODS,
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SCREWS, &c., &c.

Combine Toughness, Strength, Durability and
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CASTINGS OF ALL KINDS TO ORDER.
SEND FOR PAMPHLET AND PRICES.

THE PHOSPHOR-BRONZE SMELTING CO., LIMITED.

No. 512 Arch St., PHILADELPHIA, PA.

Owners of the U. S. Phosphor-Bronze Patents. Sole Manufacturers of Phosphor-Bronze in
the United States.

were not compelled to use the new gauge, but might continue the old British wire gauge, or might apply for a new imperial standard for flat metals. At and near Birmingham an agitation was carried on relative to the damage done to the local wire trade by the low through rates given by the railway companies for the conveyance of German and Belgian wire and wire rods, but no tangible results accrued, and the evil complained of still remains unremedied. In the third week of the month news was received from the United States of the depressed state of the iron and steel trades of that country—state of affairs which had led to the stoppage of many of the works, a shrinkage of values and a revision of wages. This news naturally tended to deepen the depression in England. The death of Sir William Siemens took place on November 19, after a few days' illness, a fall in the street having had bad effects upon an already weak heart. The return of the sworn accountants of the Northern Board of Arbitration for the two months ended October 31 certified a net average selling price of £6. 0/- per ton. The average for rails was £5. 14/-; plates, £6. 3/2; bars, £6. 3/10, and angles, £5. 10/- per ton. Plates and angles together constituted 86% of the total quantity of iron dealt with by the return, thus demonstrating very plainly the overwhelming importance of the shipbuilding trade of the North of England. Toward the close of the month Middlesboro' No. 3 declined to 37/- and 37 1/3, and hematite pigs to about 46/6 and 47/- for mixed lots. Steel rails also grew weaker on reports of sales in the United States at \$35 per ton.

December opened somewhat inauspiciously and with some rather curious anomalies in the situation. In Scotland, for instance, shipments were good, the local consumption large, the make reduced by the stoppage of several furnaces, and the stocks in Connal's stores lower weekly, yet prices were not maintained, and there was no life in warrents. In the Middlesboro' district a similar state of things existed, neither a comparative increase in the shipments of over 21,000 tons in November nor reductions in the make and stocks being able to lift up prices. Everywhere, indeed, there was a poor outlook, and pessimistic views were dominant. There were those who built somewhat upon the results of the threatened strike of miners, but that formidable (and foolish) agitation was officially abandoned on December 4. About the same time several failures in Scotland were announced, and served to confirm the fears of those who held that a serious crisis was coming upon the trade. Up to now their worst fears have not been fulfilled, but there is a widespread opinion that the outlook for iron and steel is extremely bad, and in some quarters it is believed that a sharp and marked contraction of production will be needed to restore these trades to a moderately active and fairly prosperous condition.

A COMPARISON OF PRICES.

Jan. 1, 1883.

Copper, £ s. d.

Burra Burra cake, in warehouse, £ ton

Wallerall, " " "

Braziers' sheets, 4 x 4, £ ton

Ordinary (other sizes) and bolts, £ ton

Ordinary locomotive plates and bolts, £ ton

Rolled flat bottoms for Egypt, &c., £ ton

Tough cake and ingot, £ ton

Best selected ingot, £ ton

Copper wire to 20 W. G., £ per m.

Brazed copper tubes, above $\frac{5}{8}$ to 4 in., £ per m.

Paper glazing plates, £ ton

Yellow metal braziers' sheets for India, &c., £ per m.

Yellow metal sheathing and bolts, £ per m.

Tin, £ per m.

English refined, £ ton

" blocks and ingots, £ ton

" common bars in barrels, £ ton

Pipe, 14 up to 1 in., smaller and larger sizes extra, £ ton

Pure tin sheets, £ ton

Tin Plates.

Best charcoal I. C., £ per box

Second charcoal I. C., £ per box

Best coke I. C., £ per box

Second coke I. C., £ per box

Term plates.

Solder.

Tinman's, in bars, £ cwt. quality for tea lead,

" cwt. quality for tea lead,

Plumbers' in bars, £ cwt.

Brass solder, fine to coarse, £ per lb.

Pewter sheet, No. 1, 1/2 £ per lb.; No. 2, 1/2 £ per lb.

" stick, No. 1, 10d.; No. 2, 9d. per lb.

Zinc.

Sheets, 8 x 3, No. 9 upward, £ ton

Nails, $\frac{1}{4}$ inch upward, £ ton

Speeler, ordinary brands, £ ton

" remelted, £ ton

hard, £ ton

Wire to 16 W. G., £ per lb.

Brass.

Brazed tubes, $\frac{3}{4}$ to 2 in. out, £ per lb.

Rolled brass, 2 to 6 in. to 32 W. G., £ per lb.

13 in. to 30 W. G., common, £ per lb.

7d. ; best.

Paper glazing plates, £ per ton

Yellow metal brasiers' sheets for India, &c., £ per m.

Yellow metal sheathing and bolts, £ per m.

Tin.

English refined, £ ton

" blocks and ingots, £ ton

" common bars in barrels, £ ton

Pipe, 14 up to 1 in., smaller and larger sizes extra, £ ton

Pure tin sheets, £ ton

Tin Plates.

Best charcoal I. C., £ per box

Second charcoal I. C., £ per box

Best coke I. C., £ per box

Second coke I. C., £ per box

Term plates.

Solder.

Tinman's, in bars, £ cwt. quality for tea lead,

" cwt. quality for tea lead,

Plumbers' in bars, £ cwt.

Red lead, genuine, in 5 and 10 cwt. cans,

Red lead, reduced No. 2, in 5 and 10 cwt. cans,

Red lead, reduced No. 3, in 5 and 10 cwt. cans,

The Iron Age

AND
Metallurgical Review.

New York, Thursday, January 3, 1884.

DAVID WILLIAMS, *Publisher and Proprietor.*
 JAMES C. RAYLES, *Editor.*
 JOHN S. KING, *Business Manager.*

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The Condition of Business.

The changes in the situation which occurred in the past week have been principally in the direction of strength. This has been particularly the case with steel rails. For some months the rail trade has been almost demoralized by the efforts of the various companies to secure orders, and prices drooped until some of the Pennsylvania companies accepted business at the veritable "freezing point." Very little Eastern business, if any, was taken on so low a plane. The range of prices in the East as well as in the West has, however, been sufficiently low to bring out more orders than had been expected. At the same time, the low range of prices has had the effect of narrowing the competition for business, only the companies having the best equipped and most favorably located mills being able to continue in the field. It is now stated on excellent authority that these companies are amply supplied with orders for this year. Messrs. Carnegie Bros. & Co. are refusing to take any further business under \$36.50 at mill, and the Cambria Iron Company refuse anything under \$36. The probabilities are strongly in favor of higher prices, as the requirements for the year have by no means been wholly anticipated. In case prices advance, some of the silent mills will again be enabled to run.

The demand for rails has developed the fact that there will be many miles of new railroad built in the Northwest and West during the coming season, very large orders having been placed for rails to be used in new construction. This will carry with it the consumption of much other material besides rails, so that the outlook for general business is bright in this particular direction.

As a demoralized rail market affects all other branches of the iron and steel business, there is now strong hope that other lines may participate in the cheerful feeling which pervades the rail trade. So far as pig iron is concerned, however, there has for some weeks been greater confidence in the maintenance of values than in manufactured iron. Recently many large orders for pig iron have been placed for three and six months' delivery, at, perhaps, half-a-dollar under current quotations, and leading companies find so much of their output anticipated that they feel encouraged in lighting more furnaces. We hear of this, however, only in reference to those companies which can afford to sell pig iron at present prices. There are other companies, which have

held on and kept producing as long as they could in the hope that prices would advance, which are now being compelled to suspend operations and either wholly relinquish business or wait for a more propitious season. At present the indications are strongly in favor of a large consumption of iron, but the prospects are not specially favorable to any advance.

The manufactured iron and steel trades are suffering from holiday and close-of-the-year dullness. We do not hear of any disposition to force trade, and prices are steady. Consumers' and merchants' stocks are known to be unusually low, and it is expected that trade will be active in a fortnight or so.

Mr. Hewitt on the Tariff as a Political Issue.

The letter of Mr. A. S. Hewitt to the Albany *Argus*, which we print elsewhere, has peculiar interest as a contribution to the current discussion of the tariff question. It is whispered that Mr. Hewitt is not without Presidential aspirations. If so, his letter is a bold bid for recognition as a leader of one wing at least of the party with which he is so prominently identified. It expresses more clearly than anything we have yet seen the hopes, expectations, and plans of those who are opposed to a tariff for protection.

It is not our intention at this time to discuss the soundness or propriety of Mr. Hewitt's views on economic questions as set forth in his letter. All that now concerns us is its significance as a political document. Mr. Hewitt is either much less shrewd as a politician than we had suspected, or else he has better reason than was generally supposed for committing himself and his party so decidedly to the advocacy of a revenue tariff, with free raw materials and only such incidental protection to manufacturers as is inseparably connected with a system of imports, for whatever purpose levied. Mr. Hewitt and his friends evidently believe that the only issue on which the two great parties can divide is that of protection. He classes as Democrats all who "insist that the protective system shall not be enlarged," and believe that moderate duties producing, on the average of years, a sufficient revenue are adequate for protection at the "only times when protection is needed," and as Republicans those who "believe in protection for the sake of protection." This is bold, though perhaps a little unfair. There are a great many Democrats who would accept this definition of their views as a cloak for their unconditional hostility to even incidental protection. On the other hand, there are a great many Republicans who believe in protection not at all for its own sake, but because of the tangible material benefit it has for years conferred upon the producing classes, including both capitalists and wage earners. So far as we know, there are none who advocate protection for any other reason than because it protects. But it is useless to draw nice distinctions between words in discussing a campaign document. Let us assume that Mr. Hewitt meant to say, in effect, that the Republican party favors a tariff for protection with incidental revenue, and the Democratic party a tariff for revenue with incidental protection. If this is accepted as the issue on which the approaching Presidential contest is to be fought, no one will have reason to find fault with it. We shall at least know, when the vote is counted, how the country stands on this vital question.

We should not be sorry to see this made the chief—indeed, the only—issue of the campaign of 1884. If there is substantial agreement between the great parties on every other important question, it at least shows that the affairs of the country are in pretty good shape. Furthermore, if the people of the United States deliberately choose to abandon the principle of protection, it cannot be saved by an effort to divert attention from it. After the happenings in 1880, it would seem to be a bold experiment which Mr. Hewitt suggests to his party—to remodel its old banners by blotting out the word "only" from their inscription, with no essential change of meaning. However, we are not wise in political matters, and have no wish to be. This is a country governed in accordance with the will of the people—or at least in accordance with what they declare to be their will. When we know what their will is, we shall know the fate of protection. But of one thing Mr. Hewitt and his friends may be certain—they cannot have a monopoly of the issue they present. Their opponents will help them draw the line as sharply as they wish, and will probably ask nothing better than that the question of protection to domestic industry shall be kept squarely before the people as the one which shall shape each voter's decision. This will be fair and satisfactory. If the anti-protectionists win it, they will have a perfect right to throw open our ports to the world; if they lose it, they will have at least four years in which to find a more promising issue. The danger is, however, that Mr. Hewitt's leadership will not be recognized, and that the hostility of his party to protection will be disguised under a mass of platitudes which may mean anything the voter pleases. Mr. Hewitt is entitled to the credit of having the courage of his convictions in this matter, but whether his party will have is, we fear, doubtful.

An impression having got abroad that some of the reductions that have taken place at the iron works in the neighborhood of

Pittsburgh include all classes of labor, it may be well to state that they do not affect the men who are governed by the scale agreed upon between the Amalgamated Association and the Manufacturers' Association. This scale will remain in force unchanged until the first of June, at which time a new scale will have to be agreed upon. The reduction only applies to the day men, and to the tonnage men not paid by the sliding scale above referred to.

Iron and Steel Prices in 1883.

The year 1883 passes away without a sigh of regret for its departure. It was a year of low prices and unsatisfactory business. From its beginning almost continuously to its close the demand for iron and steel receded, and very few of our works were able to secure enough orders to keep all departments in full operation. From month to month the number of active blast furnaces decreased, and the list of employed rolling mills and steel works became smaller. Production diminished rapidly, but consumption fell off quite as fast. Wages were reduced wherever possible, but prices sunk in greater ratio, and manufacturing became less and less profitable.

The beginning of the new year finds prices at such a low point that there is strong hope of a reaction before another twelvemonth rolls by. Stocks of all kinds are very low in both producers' and consumers' hands, and a very slight improvement in the general demand would find the situation very favorable for an advance in prices. The new year is, therefore, heartily welcomed, in the hope that it may prove to be at least reasonably prosperous.

We have collated some tables of prices of leading iron and steel products in 1883, to show the course of trade in that time. The first table we present gives the prices in the first week of each month for steel rails per gross ton at mill in Eastern Pennsylvania, for best refined bar iron per pound in Philadelphia, for No. 1 anthracite foundry pig iron per gross ton at tidewater, and for nails per keg, wholesale, at New York, as follows:

| First week in | Steel rails. | Bar iron. | Pig iron. | Nails. |
|---------------|--------------|-----------|-----------|--------|
| January | \$40.00 | 2.5¢ | \$28.50 | \$3.40 |
| February | 40.00 | 2.35 | 28.00 | 3.40 |
| March | 39.00 | 2.35 | 28.00 | 3.25 |
| April | 39.00 | 2.35 | 28.00 | 3.15 |
| May | 38.00 | 2.3 | 27.00 | 3.00 |
| June | 38.00 | 2.2 | 26.00 | 3.00 |
| July | 38.00 | 2.1 | 25.00 | 2.90 |
| August | 38.00 | 2.15 | 25.00 | 2.90 |
| September | 37.50 | 2.15 | 22.00 | 3.00 |
| October | 37.00 | 2.2 | 21.00 | 2.90 |
| November | 35.00 | 2.0 | 20.50 | 2.85 |
| December | 35.00 | 2.1 | 20.00 | 2.65 |

Our next table shows the prices in the first week of each month at Pittsburgh for No. 1 coke foundry pig iron, neutral gray pig iron and Bessemer pig iron, all per gross ton, and nails, wholesale, per keg, as follows:

| First week in | No. 1 foundry. | Neutral gray forge. | Bessemer pig. | Nails. |
|---------------|----------------|---------------------|---------------|--------|
| January | \$25.00 | \$21.00 | \$24.50 | \$3.40 |
| February | 20.00 | 20.00 | 23.00 | 3.30 |
| March | 22.50 | 19.50 | 22.50 | 3.30 |
| April | 25.00 | 19.00 | 22.50 | 3.00 |
| May | 21.50 | 18.50 | 21.50 | 3.00 |
| June | 21.50 | 17.50 | 21.00 | 2.90 |
| July | 21.50 | 17.50 | 21.00 | 3.00 |
| August | 21.50 | 17.50 | 20.50 | 2.90 |
| September | 21.50 | 17.50 | 20.50 | 2.70 |
| October | 21.00 | 17.50 | 20.50 | 2.70 |
| November | 21.00 | 17.00 | 20.50 | 2.60 |
| December | 20.00 | 17.00 | 21.00 | 2.40 |

For illustration of the course of prices at Chicago and St. Louis, we have taken Lake Superior charcoal pig iron at the former point and Missouri pig iron at the latter, which are quoted, per gross ton, for the first week in each month, as follows:

| First week in | Lake Sup. No. 6. | Lake Sup. No. 1. | No. 1 Missouri charco. | St. Louis. |
|---------------|------------------|------------------|------------------------|------------|
| January | \$28.50 | \$26.50 | \$21.00 | \$21.00 |
| February | 27.00 | 25.00 | 21.00 | 21.00 |
| March | 26.50 | 24.00 | 21.00 | 21.00 |
| April | 25.00 | 24.00 | 21.00 | 21.00 |
| May | 25.50 | 23.50 | 21.00 | 21.00 |
| June | 25.00 | 23.00 | 21.00 | 21.00 |
| July | 24.50 | 23.00 | 20.00 | 20.00 |
| August | 26.00 | 24.00 | 20.00 | 20.00 |
| September | 26.00 | 25.00 | 20.00 | 20.00 |
| October | 24.00 | 23.00 | 20.00 | 20.00 |
| November | 24.00 | 23.00 | 20.00 | 19.50 |
| December | 24.00 | 22.5 | | |

course of execution include a steamship 265 feet in length, for service between New York and Baltimore, an iron ship of 2000 tons for the East India trade—the largest sailing vessel in the American merchant marine—two steamers for South American waters, and half a dozen others of smaller dimensions. A steam riveting machine is among the latest acquisitions. It is pleasing to know that iron shipbuilding in this country is at least moderately prosperous.

Fluctuations in Prices Since 1872.

We present in the accompanying diagram a graphic illustration of the fluctuations in prices from the beginning of 1872 to the close of 1883, selecting for that purpose pig iron, bar iron, steel rails, and nails. The kind of pig iron here referred to is standard No. 1 anthracite, foundry at Philadelphia, and the price given is per ton of 2240 pounds. The bar iron is best refined, from store, at Philadelphia, and the price is per 100 pounds. The steel rails are standard sections, at the mills in Eastern Pennsylvania, and the price is per ton of 2240 pounds. The nails are standard sizes, at New York, and the prices is the wholesale rate per keg of 100 pounds.

The design of the diagram is to accurately represent the manner in which the price of

tonnage has been called into existence, and that in consequence an important trade is being developed at several points. Australia is among the first to feel the impetus. Our consul at Sydney, New South Wales, in a recent report says that through the establishment of the Compagnie des Messageries Maritimes, which now gives monthly communication between that city and Marseilles direct, by means of seven French steamers with a capacity of 4000 tons each, trade between France and New South Wales has greatly increased during the past four months.

As arrangements have been made for the continuance of the Pacific mail service for another year, the consul does not see why American trade might not be advanced by similar means. Germany, as well as France, is competing sharply in Australian markets.

Evidently alarmed by the threatened encroachments of France, a deputation of merchants recently waited on the Earl of Derby to confer with him respecting trade on the West Coast of Africa, the special object being to prevent the further acquisition of territory in that region by any other European power. The Earl conceded the "momentous importance" of the subject, which he said was seriously engaging the attention of the Government, but "knew of no international law which would justify them in

WASHINGTON NOTES.

(From Our Own Correspondent.)
WASHINGTON, D. C., Jan. 2, 1884.

WHAT THE MEMBERS OF THE WAYS AND MEANS SAY OF THEMSELVES.

The comments of political leaders and the press on the new Committee on Ways and Means in general, and its members in particular, have induced those gentlemen to say something about themselves.

Mr. Morrison, the chairman of the committee, was quite positive that he was a free trader during the pendency of the contest over the Speakership. He frequently observed that Mr. Randall did not represent the views of his party on the tariff question; that the South and the West were for free trade, or a tariff for revenue only, or whatever the manufacturers chose to call it, but not for protection for the sake of protection, or in any other sense; that revenue was the sole basis upon which the establishment of rates should take place. It was on this theory that Speaker Carlisle was elected. Mr. Morrison does not now talk quite so vigorously, except that the committee will act cautiously. In view of the approaching Presidential campaign and the hedging course of the Democratic conventions of five or six States, Mr. Morrison evidently prefers to take things slowly until after the election, and then, if the way is clear to crowd the industries to the wall, it would be safer to try this after, rather than before, the election.

Mr. Blackburn, of Kentucky, believes in tariff for revenue only, especially the only.

given to the country their views in a practical way in their connection with the majority on the same committee in the Forty-seventh Congress. Judge Kelley and Representative McKinley believe in protection for the fostering of manufacturing industries and the benefit of the working classes. Messrs Kasson and Russell, while sharing in these views, are disposed to favor lower duties if consistent with the interests of manufacturers and labor.

MR. HEWITT'S LETTER.

The recent letter of Mr. Hewitt on the situation of the iron trade and its causes, and the relation which legislation bears to the question, is attracting much attention here. As a member of the Committee on Ways and Means, and one of the leaders of the Democratic majority in the House, it is regarded as a fair exposition of future Democratic policy on the tariff, despite the conflicting notions of individual members in the party. Overproduction and excessive protection as the cause of the present stagnation will doubtless take with the majority, and his declaration that unless our revenue legislation be reformed there will be trouble, will encourage agitation and attempted legislation. His declaration in favor of freeing raw materials and limiting the duties on manufactured articles to the difference between wages in this and competing countries will find some advocates among his party friends, but upon what scale of rates this can be accomplished it might be well for him to explain.

In establishing this difference by legislative action Mr. Hewitt will find his party by

to employ or discharge the employee, by whose act or omission an injury may be caused, if injured, is excluded from the benefits of the act. All agreements in evasion of this act are declared null and void, and full liability is declared. It appears that the information obtained by the committee shows great indifference to the security of life and limb of employees on the part of large employers of labor, and the object of the bill is to hold such parties responsible for neglect.

A MOVEMENT TO PROMOTE INDUSTRY.

Senator Blair, the chairman of the same committee, has introduced a bill which he terms a bill "to reduce revenue, promote domestic industry and increase foreign commerce." This bill allows on all articles wholly or partially manufactured of materials imported on which duties have been paid when exported, a drawback equal to the duty paid on such materials. Ten per cent. of the amount of drawbacks is to be retained for the benefit of the collectors paying the same. The Secretary of the Treasury is required to make regulations to carry this into effect, and is required to take bonds to protect the revenues against fraud or evasion.

FOREIGN BESSEMER STEEL.

The Department of State has received, through the consul at Sheffield, England, a statement of exports to the United States for the year 1883, which shows a large decrease in the shipments of steel and Bessemer rails to this country. The aggregate value of export from that consular jurisdiction for

SCALE FOR STEEL RAILS
AND PIG IRON.

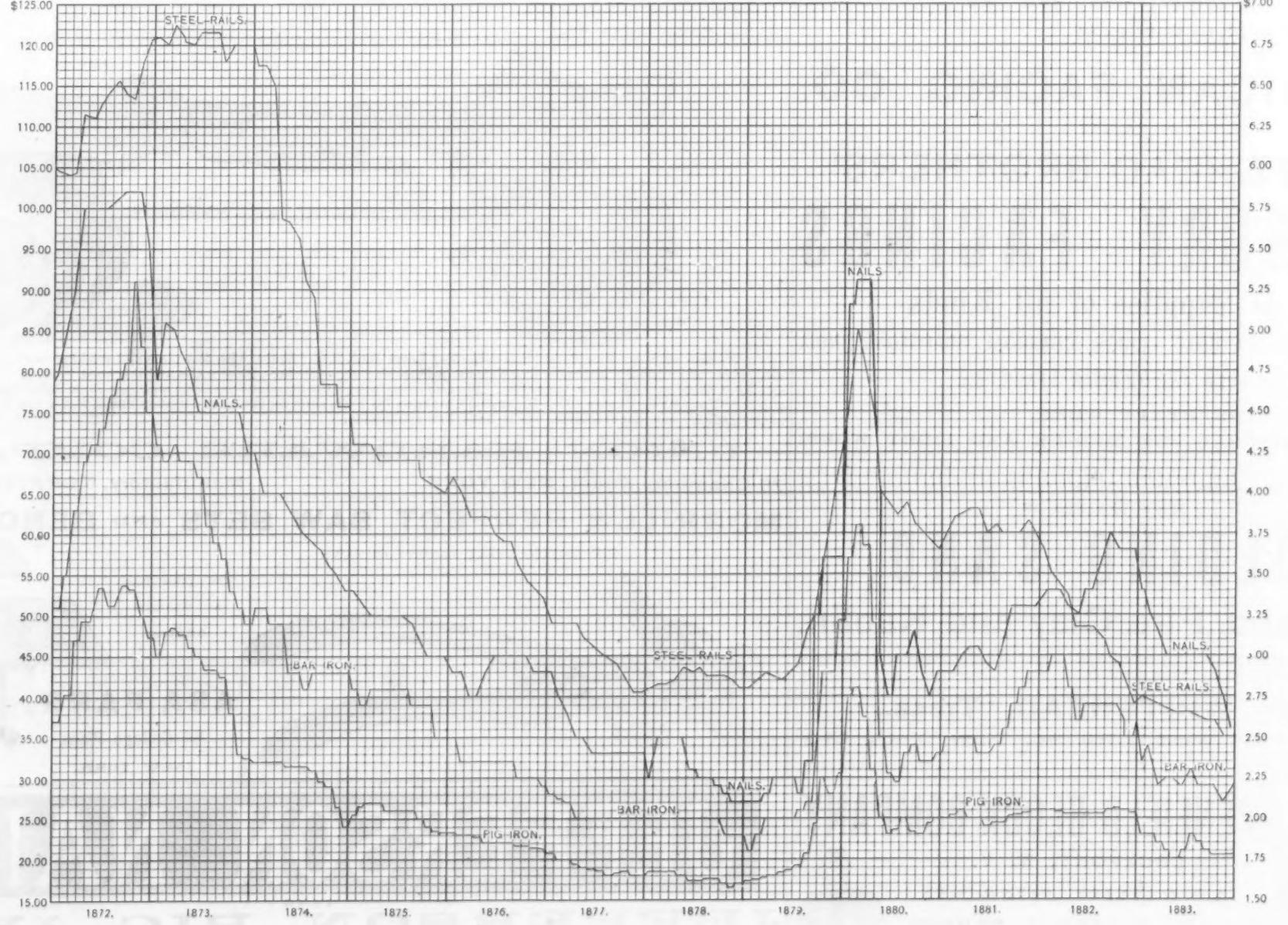


DIAGRAM SHOWING THE FLUCTUATIONS IN PRICES OF IRON AND STEEL SINCE 1872.

each of these products has fluctuated in the past twelve years, which can be done more effectively by the graphic mode of illustration than by a series of price tables. While the four products which we have taken are not presumed to cover any considerable part of the large number of iron and steel articles manufactured and sold, they will be accepted as of sufficient prominence to entitle them to be taken as typical of the general course of the iron and steel trades in the years herein embraced.

The plan on which the diagram is constructed is a trifle complicated by the necessary use of the double scale of values, but we do not think it will be found confusing. As the unit of value is the ton for steel rails and pig iron, the keg for nails and 100 pounds for bar iron, it will at once be manifest that our diagram would have to be very large to cover the extreme range of prices if they were all represented on the same scale. We have therefore adopted a double scale, one being indicated by a vertical row of figures on the left of the diagram, and the other by a corresponding row on the right. The whole diagram is consequently laid out in squares of \$1 each in considering the price of steel rails and pig iron, or in squares of 5 cents each in considering the price of nails and bar iron. The squares also each represent a month when taken horizontally.

Whatever may be said of the policy or in-policy of the French bounty law for the encouragement and upbuilding of a mercantile navy, it is certain that a largely-increased

saying that whereas they had made various settlements in places unoccupied, and to which no other European power laid claim, "that the French Government should not do the same thing." Ultimately he hoped to come to some arrangement on the basis of fair play and equity to both countries. The strenuous efforts now making by merchants in all parts of Western Europe for the extension of foreign trade are in strong contrast with the apparent indifference of merchants in the United States.

The chartering of a steamer to carry crude petroleum in barrels from New York to a port on the Adriatic causes unusual commotion in shipping circles, as this peculiarly hazardous line of business was supposed to belong exclusively to sailing vessels. Steam has already driven the old-fashioned wind motor from the Mediterranean fruit trade, and almost wholly from cotton and grain transportation. It is now also contending actively for the lumber trade, both in this country and in the North of Europe.

The excavations from the east and west ends of Gould's Tunnel, near Steubenville, Ohio, have met about 2300 feet from the east end. The tunnel is completed for about 2000 feet in the east end and 800 feet in the west end. It is nearly four years since the work was commenced, and 300 men have been employed on it night and day. It will be 3300 feet long, and will do away with the most dangerous curves on the Panhandle Railroad, saving about 2½ miles of travel. It is expected the tunnel will be completed in February.

The time for accomplishing that end must be determined, he says, by circumstances, doubtless meaning whether it would be safe to venture before or after the election. Mr. Blackburn believes in loaning the credit of the Government to the whisky manufacturers of Kentucky and withdrawing the fostering care of the Government, now enjoyed at no cost, from the industries which give employment to a large share of the people. That is, Mr. Blackburn prefers to keep the stills of Kentucky in motion and to stop the engines of the manufactory in all parts of the country.

The man who talks about "knifing" the iron industries of the country needs no explanation of his position. Hurd out-Heroes Herod in his free-trade sentiments. Sometimes it is wondered whether it is not the British Lion which is heard instead of the Ohio member. The British manufacturers have a zealous champion of their cause in Mr. Hurd, but what glory Mr. Hurd expects to gain in the pauperization of the workingmen of his country is a problem yet to be solved. He says he is a free trader out and, out, and glories in it. So much for Hurd.

James K. Jones, who comes up from Arkansas says, first, "I am a Democrat"—that

no one doubts—and, secondly, "I am for a revenue tariff and for revenue reform, but by easy approaches." He wants "a better and more equitable tariff without in any manner disturbing the business interests of the country." It remains for Mr. Jones to explain the way.

The song of the Democratic wing of the committee, therefore, in lump is revenue tariff at the earliest moment, but keep clear of the breakers of public sentiment for the present.

Judge Kelley, the chairman of the last committee, and his Republican colleagues have

no means a unit. This is the point on which they have split before and will split again. Mr. Hewitt answers opposition in this quarter by claiming that the labor of the country is so interwoven with tariff schedules that whatever reduction in rates is made must be gradual. That any arbitrary reductions would paralyze industry, disastrously affect business and culminate in general ruin there can be no doubt. If these be Mr. Hewitt's views the question might be asked, Why does he encourage his but too willing party friends to disturb the tariff at all?

PROTECTION OF EMPLOYEES OF TRANSPORTING LINES.

Senator George, of Mississippi, a member of the Committee on the Investigation of the Causes of Strikes, and Relations of Capital and Labor, has introduced a bill which will form part of the series of subjects of consideration growing out of the labors of this committee. "The bill is to protect employees and servants engaged in foreign and inter-State commerce and employees in the District of Columbia and the Territories of the United States." The provisions of the bill apply to persons employed in navigating any vessel engaged in commerce between the United States and any foreign countries, or between the States, and any person employed by any person or company engaged in carrying passengers or property by railway transportation through the whole or part of two or more States, or with any foreign country. It makes such employee entitled to damages from his employer for any injury sustained in such employment through the carelessness, negligent or unskillful act or omission of his employer or master, or through the carelessness, negligent or unskillful act or omission of his fellow servant engaged in the same service. The officers of such vessels or companies, agent or employee with power

the year ended September 30, 1882, was \$6,217,000, and for the year ended September 30, 1883, \$3,947,000, showing a decrease of \$2,270,000. This is regarded as favorable to the working of the present tariff and the improvement in quality and price of American Bessemer steel.

A LARGE SURPLUS.

The Secretary of the Treasury reports a surplus of \$142,000,000 of cash on hand. A people with such a balance in their public treasury must be enjoying some sort of prosperity. The danger of this surplus, however, is that Congress will take it as a reason why they should begin to tinker with the tariff.

Some interesting experiments have been made in Germany for the purpose of determining the respective values of wet and dry coal for the evaporation of water. The results showed that small coal containing 18 per cent. of water and 9.9 per cent. of coal dust, evaporated 5.7 pounds of water per pound of fuel, while the same amount of coal containing 3 per cent. of water evaporated 8 to 8.5 pounds of water per pound of fuel. The figures showed that the employment of wet coal gave rise to a loss of from 15 to 25 per cent.

A monument in memory of Mr. James Beaumont Neilson, the inventor of the hot blast, has been erected in England by his son, Col. W. M. Neilson. The monument is shaped after the pyramid style, and is built of large blocks of whinstone, with granite corners. Occupying a commanding position, it rises to a height of 55 feet, and at the base is 20 feet square. On the north side is the inscription: "1883. W. M. N. Fecit." On the south side: "Neilson Hot Blast, 1883."

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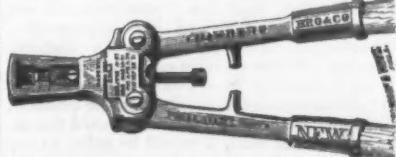
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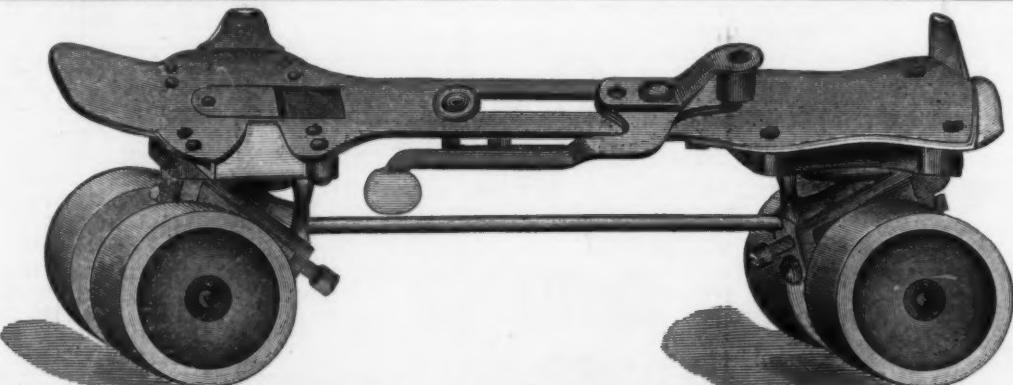
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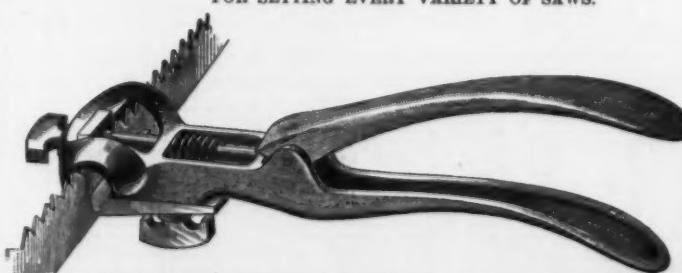


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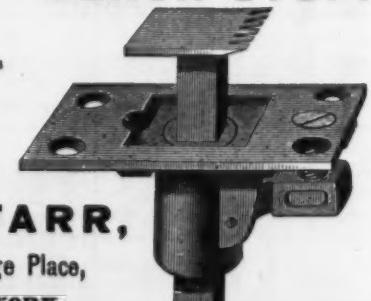
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Mr. Hewitt on the Tariff.

Hon. Abram S. Hewitt has addressed the following letter to the editor of the Albany *Argus*, giving at length his views on the tariff question:

NEW YORK, December 26.

DEAR SIR: I am in receipt of your letter in which you say: "The *Argus* is now engaged in an inquiry into the causes and effect of the present depression of the iron industry. It is especially desired to be known what relation this state of things bears to existing tariff conditions." You ask my opinion in reference to these points.

I answer that the proximate cause of the present depression of the iron industry is to be found in the fact that the capacity for producing iron is in excess of its actual consumption, not only in this country, but in those foreign countries which are large producers of iron and steel. When the supply exceeds the demand prices fall. Establishments which cannot produce at the current prices without loss are compelled to suspend operations, and thus comes the actual depression to which you refer. The ultimate causes of such a state of things are usually manifold; sometimes they are too obscure to be discovered with certainty. For example: The influence of abundant harvests, or of a failure of crops, upon the general condition of industry is unquestioned. Yet these very causes may produce prosperity in some branches of business, while they produce depression in others. So in regard to the influence of tariff legislation. If duties are suddenly raised at a time when there is a demand for the foreign product, prices will go up and the iron business will be prosperous. If, on the other hand, duties are reduced, so as to admit of a larger supply of the foreign product, the domestic business will be for the time being unfavorably affected, and depression will result.

These, however, are only immediate and temporary effects. As a matter of fact, prior to 1878, under the highest tariff ever known in this country, we had a long period of depression in the iron business. But about that time railway enterprises were undertaken on a large scale, producing a sudden demand for more iron and steel than the world was prepared to supply. Prices advanced all over the world, and to these prices was added the very high rate of duty then prevailing upon foreign iron brought into this country. The profits of the domestic business became excessive, and the owners of existing works proceeded to enlarge their capacity to the utmost, in order to gather this harvest of great profits, while new capital was attracted into a field in which the returns were known to be abnormally large. The business being thus overdone, a glut of iron resulted, and the reaction has brought about a state of things even worse than that which existed prior to 1878.

The evil from which we now suffer is, therefore, largely due to the fact that the war tariff imposed higher duties than were needed for protection, thus giving excessive profits to the manufacturers in a period when the profits would have been large enough without such high protective duties. We are suffering from unnatural stimulation, which aggravated the excitement when the public interest required that it should be allayed, and now aggravates the depression by the excessive capacity for production which it engendered. How long this depression will continue no man can predict. But inasmuch as eras of prosperity and depression succeed each other in cycles, it is certain that sooner or later we shall come again to the period when the demand for iron will exceed the supply.

Unless our revenue legislation be meanwhile reformed, we shall, then, have a repetition of the experience through which we have passed since 1878, an experience which shows that excessive profits are, in reality, of no real benefit either to the manufacturers, except in rare instances, or to the country at large, while the evils resulting from them are serious. They are especially injurious to the workingmen of the country, who are the chief sufferers when the inevitable reaction to unnatural expansion narrows the field of employment for labor.

The lesson to be derived from this experience is that the duties on all kinds of iron should never exceed the lowest possible point which, in time of depression, will protect the domestic market from the flood of foreign iron which otherwise might be poured into its lap. Such rates of duty, provided they are specific, will, on the average, yield the largest amount of revenue, because when the price rises and the producer no longer needs protection, the consumer, who does need protection, can then supply his wants at a fair price in the foreign market without paying an increased duty, if he cannot get equally fair terms at home.

Moreover, the experience of all commercial nations has shown that moderate specific duties afford the only safeguard against frauds in the revenue, as well as from smuggling as from undervaluation in the invoices. The blind adherence to ad valorem duties in our existing tariff has only served to throw the importing trade into the hands of foreigners and to drive out reputable American houses from this business.

The reduction of extra-protective duties to a reasonable standard of specific duties is therefore the only practicable means of avoiding an unhealthy expansion of business when it is active. Extra-protective duties merely result in overproduction, in the general derangement of industry and in consequent suffering to the workingmen by the loss of employment and the reduction of wages. They must be made to realize that the only fund out of which their wages can be paid is produced by the money which is received for the product of industry. Out of this fund must first be paid the cost of the raw material, and next the remuneration for the capital employed in the work of production. What remains is the amount available for the payment of wages. Hence the cheaper we can get raw materials and capital the more we can pay for the labor engaged in manufactures. High rates of interest and high-priced raw materials mean therefore, lower wages for labor, while cheap raw materials and cheap capital mean higher wages for labor. The workingmen thus have an interest, direct and immediate, in

removing the duty from raw materials, as well in the iron business as in every other branch of industry carried on in this country. By raw materials I mean fuel, all food products, all materials to which no process of manufacture has been applied, all metallic ores and all waste products which are fit only to be manufactured.

So far as any relief can be provided by legislation for the existing state of affairs the remedy must be found, first, in freeing raw materials from all duties; and, secondly, in imposing rates of duty on manufactured products not more than sufficient to make good the difference in the amount paid for labor in the production of any given article in this country, as compared with the amount paid for the same labor in other countries with which we compete. For this purpose the incidental protection afforded by revenue duties will, as a rule, be found sufficient when any protection is needed.

I am aware that this last proposition involves the protective idea to some extent, but to no greater extent than is the logical outgrowth of our past legislation. If we had never had protection we should not be required to pay any attention to the question of rates of labor, which are the result, not of protection, but of other conditions entirely independent of legislation. But the protective system has undoubtedly built up some branches of industry which otherwise might not, in consequence of the higher rate of wages, have existed. Inasmuch as this is their misfortune and not their fault, no sensible legislator would strike these industries down by the sudden abrogation of the protective system. We should, nevertheless, endeavor gradually to reduce its evils to a minimum, until, in the progress of time, it shall have given way, under natural laws, to a better and sounder condition of affairs.

But in this assurance of inevitable progress there is to be found no justification for the further maintenance of duties which only tend to reduce the wages of labor without conferring benefit on any interest whatever; duties which only impair our ability to sell commodities in the open markets of the world, and hinder the natural and healthy growth of business. All such unnecessary and hurtful obstructions should be removed without delay, and it will be a mockery of duty if Congress should fail to open the way to "free trade" and wider markets for our products through any fear of consequences to politicians who have not the courage of their convictions, or have no other convictions than the desire for office. The mere politician follows public opinion; the true statesman instructs it. His constant aim should be to make clear to those who depend upon their daily labor for their daily bread the real basis upon which their welfare rests, and then to trust to their intelligence and votes for support. Success on any other condition would be dishonor. Any party which expects to get power by playing the game of "hide and seek" in politics does not deserve, and will not gain, the confidence of the country.

The only living issue, then, between the two great political parties which divide the country, as I understand it, is this—whether the revenue system shall be reformed, and upon what basis of principle it shall be settled.

The Republican party believes in the doctrine of protection for the sake of protection. It insists that protective duties are constitutional and are necessary in order to insure to the workingmen a fair remuneration for their labor. It would, therefore, impose duties as nearly prohibitory as possible on articles produced in this country, and as a policy make free those articles which are not or cannot be produced here.

The Democratic party insists that the Constitution merely provides for the imposition of duties for revenue and not for protection, except so far as duties so imposed necessarily afford incidental protection; that protective duties cannot, and do not, favorably affect the general rate of wages; that legislation is powerless to permanently increase the remuneration for labor, although it may seriously impair it; that protection can divert labor and capital from more profitable into less profitable channels of industry. It recognizes, however, the fact that the protective system has been so long in force and is so entrenched in judicial construction as to make it idle now to raise the constitutional question; that the amount of capital and labor now engaged in the protected industries is too great to admit of any legislation likely to do them any real injury; that the only reform now possible is in the reduction and removal of duties which are no longer needed to insure their continued existence; that these excessive duties are in reality obstructive to their prosperity; that duties on raw materials should be removed, because such duties constitute a practical deduction from the wages of labor. If the question were an open one, the Democratic party would prefer to raise the public revenue by duties imposed upon articles not produced in this country, and trust to natural laws for the development of its industries. But the question is foreclosed by the great extent of the protected industries replacing dead industries which otherwise would have thriven. The Democratic party, recognizing the necessity, therefore, of reforming the tariff in such a way as not to deprive these industries of the incidental protection afforded by reasonable revenue duties, insists that the protective system shall not be enlarged, and believes that moderate duties producing, on the average of years, a sufficient revenue, are adequate for protection at the only times when protection is needed—that is, in bad times, when our foreign competitors would seek to get rid of their surplus product in our markets, which, considering that an idle population is the greatest social calamity, we must then preserve, in order to give employment to our labor engaged in the protected industries; that at all other periods extra-protective duties merely give excessive profits to one class at the expense of other classes, ending in overproduction, stagnation of business and irregular employment for labor, powerless to protect itself against the errors of legislation and selfish action of capital striving for unreasonable profits. The condition of the business of the country at this time is conclusive proof that the protective system cannot relieve either labor or capital from the

MOUNT CARMEL OX SHOES WITH STEEL TOE CALKS.

FINISHED COMPLETE. READY FOR NAILING ON.

The Best and Cheapest Shoe Made.

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United States Patent, July 17, 1881.
Canada Nov. 1, 1883.

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DERAIL.



Made of Wrought Iron (except the Wheel, which has a Steel Axle) in a thorough manner, of sufficient strength to sustain the heaviest door.

The heaviest door can be moved by a child, and will always operate as well as when first applied. The Rail is made of Wrought Iron, in two-feet sections.

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Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS,

Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.

400 CHESTNUT STREET.



It is the Most Popular and Best Selling Agricultural Implement on Earth. We make a Variety of Sizes working from 4 to 15 Feet Wide. Send for Pamphlet containing Thousands of Testimonials from 46 different States and Territories.

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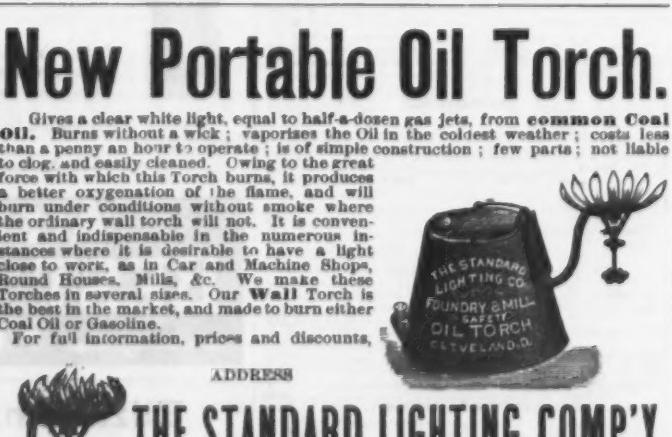


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House, Tea, Hand,
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New Portable Oil Torch.
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THE STANDARD LIGHTING COMP'Y,

MAIN OFFICE:

122 WATER STREET, CLEVELAND, OHIO.

WHOLESALE METAL PRICES, January 2, 1884.

(For Wholesale Hardware Prices, See Pages 39, 40.)

METALS.

IRON.—Duty: Bars, 8-10¢ to 1 1-10¢ per lb; provided that no Bar Iron shall pay a less rate of duty than 35¢. Sheet, 11-16¢ to 15-16¢ per lb. Band, Hoop and Scroll, 1¢ to 1 4-10¢ per lb. Railroad Bars weighing more than 25 lb per yard, 7¢ per lb.

American Iron.

Foundry No. 1. \$10.00 @ 22.00
Foundry No. 2. \$10.00 @ 20.00
Gray Forge. 17.50 @ 18.75

Scotch Iron.

Carnbroe. 21.00 @ 22.00
Celtess. 22.50 @ 23.00
Shotts. 22.50 @ 23.00
Glenravel. 21.00 @ 22.00
Gartsherrie. 22.50 @ 23.00
Langloan. 22.50 @ 23.00
Suumerlie. 22.50 @ 23.00
Dalmellington. 20.25 @ 21.00
Eigntton. 20.00 @ 20.00

Rails.

Steel, at Eastern mills. 20.00 @ 25.00
Old Rail, Ts. 22.00 @ 22.50

Scrap.

Wrought, per ton, from ship and yard. 22.00 @ 24.00

Ba Iron from Store.

Common Iron:
1/4 in. round and square. 1/2 lb 2 @ 2.10¢
1 to 6 in. x 1/2 in. 1.00
1 to 6 in. x 1/2 and 5-10. 2.40 @ 2.50¢
Rods—1/4 and 1-1/2 round and sq. 1/2 lb 2.30 @ 2.40¢
Bands—1 to 6x3-10 on No. 12. 1/2 lb 2.60 @ 2.70¢
" Burden's Best" Iron, base price. 1/2 lb 2.75¢
Ulster Iron, base price. 1/2 lb 2.75¢
Norway Nail Rods. 5¢ @ 5¢

Sheet Iron.

Common. R. G.
American. American.
Nos. 10 to 16. 1/2 lb 1.30¢ @ 1.30¢
17 to 30. 1/2 lb 1.30¢ @ 1.30¢
21 to 24. 1/2 lb 1.30¢ @ 1.30¢
25 and 30. 1/2 lb 1.30¢ @ 1.30¢
27. 1/2 lb 1.40¢ @ 1.40¢
28. 1/2 lb 1.40¢ @ 1.40¢
29. 1/2 lb 1.40¢ @ 1.40¢
Galvanized, 10 to 20. 1/2 lb 6¢ @ 6¢
Galvanized, 21 to 24. 1/2 lb 7.5¢ @ 7.5¢
Galvanized, 25 to 26. 1/2 lb 8¢ @ 8¢
Galvanized, 27. 1/2 lb 8.5¢ @ 8.5¢
American Russia. 1/2 lb 8.5¢ @ 8.5¢
Russia. 1/2 lb 8.5¢ @ 8.5¢

IRON Wire.—See Wire.

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb or less, 45¢ ad. val.; valued above 4¢ and not above 7¢ per lb, 2¢ per lb; valued above 7¢ and not above 10¢ per lb, 24¢ per lb; valued above 10¢ per lb, 34¢ per lb. Extras.—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 1/2¢ per lb in addition to above; Steel Circular Saw Plates, 1/2¢ per lb in addition to the above.

American Cast Steel.

For American Steel, see Pittsburg quotations.

English Steel.

Best Cast. 1/2 lb 15¢
Extra Cast. 1/2 lb 16¢
Circular Saw Plates. 1/2 lb 15¢
Round Machinery, Cast. 1/2 lb 17¢
Swaged, Cut. 1/2 lb 15¢
Bent, Double Shear. 1/2 lb 12¢
Blister, 1st quality. 1/2 lb 12¢
German Steel, Best. 1/2 lb 8¢
3d quality. 1/2 lb 8¢
3d quality. 1/2 lb 8¢
Sheet Cast Steel, 1st quality. 1/2 lb 15¢
3d quality. 1/2 lb 12¢
TIN.—Duty: Plates, Sheets, Tagger and Terne. 1¢ per lb; Bars, Block and Pigs free.

Banca. 1/2 lb 21 @ 21¢
Straits. 1/2 lb 21 @ 21¢
English. 1/2 lb 23 @ 23¢

Charcoal Tin Plates.

I C 10x14 23 sheets. 1/2 lb \$6.00 @ 9.75
I C 10x12 " 12.50 @ 13.50
I C 10x28, 112 " 12.50 @ 13.50
I X 10x14 " 7.25 @ 8.00
I X 10x12, 102 " 7.25 @ 8.00
D C 12x17, 102 " 6.00
D C 12x17, 100 " 6.00
For each additional X add. 1.75

Coke Tin Plates.

Best. Ordinary. 1/2 lb \$5.50 @ \$5.25
I C 14x20 M. F. @ \$7.75
I C 14x20. \$5.50 @ \$5.25
I C 14x20. 7.00 @ 7.75
I C 20x28. 10.75 @ 11.25 10.50 10.00 @ 10.50
I C 20x28. 14.50 @ 15.50 @ 15.50

Tin Roller Plates.

Prime Char. 2d. quality Coke. 1/2 lb \$5.50 @ \$5.25
I C 14x20. \$5.50 @ \$5.25
I C 14x20. 7.00 @ 7.75
I C 20x28. 10.75 @ 11.25 10.50 10.00 @ 10.50

ANTIMONY.

Hallett's. 1/2 lb 10¢ @ 11¢
Cookson. 1/2 lb 12¢ @ 12¢

SPELTER.—Duty: Pigs, Bars and Plates, \$1.50

per 100 lbs. American, cash. 4¢ @ 5¢

ZINC.—Duty: Pig or Block, \$1.50 per 100 lbs.

Sheet, 2¢ per lb. 60¢ per cwt.

Zinc—Open. 6¢ per lb.

PRINTERS' RULES.

Sheets wider than 30 in. and under 40 in. 4¢
" " " 40 in. and over. 5¢

Circular sheets, in diam. from 4 in. to 14 inclusive, 4¢

" " " over 14 " 10 " 4¢

" " " 20 " 30 " 4¢

" " " 30 " 40 " 5¢

" " " 40 in. 5¢

LOW BRASS.

Four cents per lb more than High Brass.

Gilding Metal 8¢ per lb more than High Brass.

In Bars. 4¢

Platers' or Gold Metal Sawed. 5¢

Planed or Polished. 5¢

FOR SLITTING.

Metal, in width 2 in. to 1/2 in. to No. 28, inclusive, 1¢

per lb advance.

Metal, in width 2 in. to 1 in. thinner than No. 28, 2¢

per lb advance.

Metal, in width 1 in. to 1/2 in. thinner than No. 28, 3¢

per lb advance.

Metal, in width 1/2 in. to 1/4 in. thinner than No. 28, 4¢

per lb advance.

Metal, in width 1/4 in. to 1/3 in. thinner than No. 28, 5¢

per lb advance.

Metal, in width 1/3 in. to 1/4 in. thinner than No. 28, 6¢

per lb advance.

Metal, in width 1/4 in. to 1/5 in. thinner than No. 28, 7¢

per lb advance.

Metal, in width 1/5 in. to 1/6 in. thinner than No. 28, 8¢

per lb advance.

Metal, in width 1/6 in. to 1/7 in. thinner than No. 28, 9¢

per lb advance.

Metal, in width 1/7 in. to 1/8 in. thinner than No. 28, 10¢

per lb advance.

Metal, in width 1/8 in. to 1/9 in. thinner than No. 28, 11¢

per lb advance.

Metal, in width 1/9 in. to 1/10 in. thinner than No. 28, 12¢

per lb advance.

Metal, in width 1/10 in. to 1/11 in. thinner than No. 28, 13¢

per lb advance.

Metal, in width 1/11 in. to 1/12 in. thinner than No. 28, 14¢

per lb advance.

Metal, in width 1/12 in. to 1/13 in. thinner than No. 28, 15¢

per lb advance.

Metal, in width 1/13 in. to 1/14 in. thinner than No. 28, 16¢

per lb advance.

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per lb advance.

Metal, in width 1/15 in. to 1/16 in. thinner than No. 28, 18¢

per lb advance.

Metal, in width 1/16 in. to 1/17 in. thinner than No. 28, 19¢

per lb advance.

Metal, in width 1/17 in. to 1/18 in. thinner than No. 28, 20¢

per lb advance.

Metal, in width 1/18 in. to 1/19 in. thinner than No. 28, 21¢

per lb advance.

Metal, in width 1/19 in. to 1/20 in. thinner than No. 28, 22¢

per lb advance.

Metal, in width 1/20 in. to 1/21 in. thinner than No. 28, 23¢

per lb advance.

Metal, in width 1/21 in. to 1/22 in. thinner than No. 28, 24¢

per lb advance.

Metal, in width 1/22 in. to 1/23 in. thinner than No. 28, 25¢

per lb advance.

Metal, in width 1/23 in. to 1/24 in. thinner than No. 28, 26¢

per lb advance.

Metal, in width 1/24 in. to 1/25 in. thinner than No. 28, 27¢

per lb advance.

Metal, in width 1/25 in. to 1/26 in. thinner than No. 28, 28¢

per lb advance.

Metal, in width 1/26 in. to 1/27 in. thinner than No. 28, 29¢

per lb advance.

Metal, in width 1/27 in. to 1/28 in. thinner than No. 28, 30¢

per lb advance.

Metal, in width 1/28 in. to 1/29 in. thinner than No. 28, 31¢

per lb advance.

Metal, in width 1/29 in. to 1/30 in. thinner than No. 28, 32¢

per lb advance.

Metal, in width 1/30 in. to 1/31 in. thinner than No. 28, 33¢

per lb advance.

Metal, in width 1/31 in. to 1/32 in. thinner than No. 28, 34¢

per lb advance.

Metal, in width 1/32 in. to 1/33 in. thinner than No. 28, 35¢

per lb advance.

Metal, in width 1/33 in. to 1/34 in. thinner than No. 28, 36¢

per lb advance.

Metal, in width 1/34 in. to 1/35 in. thinner than No. 28, 37¢

per lb advance.

consequences of overproduction, which is its legitimate result.

Between the political parties representing these two opposing views the country is soon to make its choice. The Republican party offers no remedy for the policy which has produced the existing paralysis of industry. The Democratic party proposes to open the way to freer markets, fuller trade and better wages by abolishing the duties on raw materials and removing the purely obstructive features of the tariff. If the Democratic House shall frame and pass a judicious measure of revenue reform, carefully adjusted to the actual condition of our suffering industries, and the Republican Senate shall refuse to concur, the issue will be fairly joined. The people can then decide whether the do-nothing party now in power shall be replaced by an administration which will remove the artificial barriers to healthy progress. When this is done, and not till then, will the country realize that it is no longer an infant at nurse, but a veritable giant, only requiring "ample room and verge enough" for the free play of its vast energies.

Sincerely yours, ABRAM S. HEWITT.

SCIENTIFIC AND TECHNICAL.

Causes of the Spontaneous Combustion of Coal.

Durand, says the *Chronique Industrielle*, attributed the spontaneous combustion of coal to the presence of pyrites, which, oxidizing under certain conditions, ignites and sets fire to the coal in which it is embedded. But from experiments made by Fayol it was proved that the real cause of spontaneous combustion lay in the oxidation of the coal itself, and not the pyrites, as was formerly supposed. The rate of absorption of the oxygen depends upon the temperature and size of the coal. According to the *Journal de la Société de la Chimie Industrielle*, bituminous coal takes fire at 200° C., coke at 250° C., and anthracite at 300° C. After having heated for four hours, at 200° C., a mixture of coal dust and pyrites, Fayol found that the coal had absorbed 6 per cent of oxygen, while the pyrites had taken up only 3½ per cent. This fact was also proved by the following experiment: 900 grains of coal dust and 3350 grains of pyrites were placed in separate iron boxes. The boxes being heated to 135° C., the temperature of the coal and pyrites was found to be the same, but in increasing the heat the temperature of the pyrites remained the same, while that of the coal increased rapidly, combustion ensuing at the end of a few hours. Two other boxes containing respectively coal and pyrites were placed in an oven and heated to 200° C. The temperature of the coal rapidly rose; in 40 minutes, having reached 200° C., it took fire, while the pyrites registered but 150° C. It was also found that the combustion of the coal was not in any way accelerated by a mixture with pyrites.

The Match Industry in Europe.

We extract the following account of the match industry in Europe from an article on the subject published in the *Chemische Zeitung*:

The first matches, manufactured in Austria, in Germany, consisted of imperfectly prepared splints, surmounted by a head composed mainly of phosphorus, chlorate of potassium, sulphide of antimony and gum. These had so many disadvantages that considerable efforts toward improvement were made, and in the year 1840 it was possible to dispense with the presence of potassium chlorate, using in its place a mixture of dioxide and nitrate of lead. Little further progress was made until the year 1857, when experiment proved the value of red or amorphous phosphorus, discovered by Schroeter 10 years previously, for the preparation of the so-called safety matches, first brought into the market by Sweden in the year 1861. At this period Wiederhold undertook a series of experiments with a view to the entire elimination of phosphorus in match manufacturing, but without success. Between 1860 and 1870 the cases of necrosis among workmen, induced undoubtedly by the employment of a needless excess of phosphorus and the absence of all sanitary arrangements, gradually led to legal restrictions being placed upon the manufacture; in Denmark and Switzerland these culminated in 1875 and 1879, respectively, in legal measures forbidding the use of phosphorus altogether. As regards the injury to the health of workmen when proper precautions are taken in the application of phosphorus, information may be gleaned from the annual report of the inspectors of factories for the German Empire, wherein it is stated that in 1879, among 5724 workmen coming in contact with phosphorus vapors, only nine cases of necrosis were noticed, six being cases of sickness and three of death. The Danish Government forbade, in 1875, the sale of any but the so-called Swedish safety matches, and with general satisfaction. In Switzerland, however, the use of matches free from phosphorus, inflammable on any surface, was permitted until 1882, when a commission appointed by the Department of Commerce brought its labors to a close. Careful inquiry showed that these matches could not be manufactured of a uniform strength, that they lost their inflammability in a moist atmosphere, that some varieties could only be ignited upon a prepared surface, while others actually exploded by gentle mutual friction during railroad transport. The year 1882, therefore, saw the passing of an act in Switzerland forbidding the sale of any but safety matches. The impracticability of Wiederhold's suggestions becomes very apparent when it is recalled that his matches, containing hypophosphite of lead, so-called universally inflammable, either require a prepared surface or else explode with a touch, and evolve fumes of lead more injurious than those of phosphorus. In fact, the number of workmen engaged in this manufacture who suffer from lead sickness is 1000 times as great as the number suffering from phosphorus necrosis. As regards the employment of the sulphocyanides of copper and lead which form explosive and easily inflammable mixtures with potassium chloride, little need be said, or they condemn themselves by the fact

that, during manufacture and ignition, dangerous amounts of hydrocyanic and thiocyanic acids are evolved. Absolutely impracticable, likewise, are all mixtures of red phosphorus and potassium chloride, which in their instability and violence closely resemble the chloride and iodide of nitrogen.

Electrical Conductors.

Some information respecting the wire used for electrical conductors was given at a recent meeting of the British Institution of Civil Engineers. Copper is almost universally used for insulated conductors, and the manufacture has been so much improved that it is now twice as good as it was in 1856. Copper wire has a breaking strain of 28 tons per square inch, while iron wire breaks with 22 tons. The best copper comes from Japan, Chili, Australia and Lake Superior, but a great deal of pure copper is obtainable by electro-deposition. The ordinary best puddled iron is at present used only for fencing purposes, but a mild English Bessemer steel is largely used for railway telegraphs and for stays, although the resistance is very high, owing to the presence of manganese. The wire used by the Post Office is made from Swedish charcoal iron. Swedish Bessemer, or a specially-prepared low-carbon English Bessemer, is adopted by the Indian Government. Cast-steel wire, with a breaking weight of about 80 tons to the square inch, has been adopted on the Continent for telephone currents, while in England, where speed of working is the prime consideration, electricians are satisfied with a breaking strain of 22 tons on the square inch. In the Colonies, where long spans are essential and speed of working is not so important, the specification is 30 tons on the square inch.

Utilizing Coal Refuse.

At the meeting of the members of the Manchester (England) Association of Employers, Foremen and Draftsmen, held on November 24, a paper on the recovery of by-products in the manufacture of coke was read by Mr. J. Nasmith. At the conclusion of his paper he referred to an interesting application of the principles of the utilization of by-products which was now being extended to the unsightly heaps that were to be found on the pit banks at most of the collieries, and which sometimes became a source of danger and nuisance to the community. He had been favored with particulars of two attempts that had been made to deal with these heaps profitably. The first experiment was made at Seaton Burn, where a heap in the immediate neighborhood of the village was causing great discomfort to the people. By covering it with sand, and withdrawing the gas by a blower through perforated pipes sunk to the depth of 6 feet in the heap, the nuisance was entirely stopped, and a considerable recovery of ammoniacal liquor, with a small quantity of oil, was obtained. At Kelvinside, near Glasgow, a heap treated in the same way yielded ammoniacal liquor to the extent of several hundred gallons per day, the liquor containing 5 oz. of sulphate of ammonia per gallon. The patentee of this principle was Mr. L. H. Annom. In the treatment of heaps for this purpose it was proposed to build them over culverts laid in the ground, and when the heap was complete and fired, the gas could be withdrawn through the permanent pipes. It would thus be seen that in the direction of waste-saving great advances had been made, and it was certain we were only at the beginning. The time would come, when, as in gas works, there would be no such word as waste; so in all other uses of fuels they might say the same thing. Without going so far as to say that eventually all coal used would be coked, and only the gas and residual coke used as fuel, the by-products being extracted, still it was certain that great advances in this direction would be made, and at any rate there could be no doubt that the question was now in such a form that the success of these efforts was assured.

The Iron Question in Canada.

The Montreal *Herald* in a recent issue says: The deputation—headed by two Cincinnati gentlemen—who waited on Sir Leonard Tilley, at Toronto, to urge upon him legislation in aid of the establishment of works for the manufacture of pig and bar iron, demanded a Government bonus amounting to \$6 a ton on pig iron and \$18 on wrought iron or merchant bar. They allege that if this degree of protection be granted, the parties whom they represent will invest \$2,000,000 in works at Toronto and give employment to 2500 to 3000 men. An account of this interview states that "Sir Leonard said that, of course, he could make no definite statement as to what the Dominion Government might do, but would bring the whole matter before his colleagues for consideration, and whatever was proposed would have to be passed upon by Parliament. One thing he pointed out—that no concession would be made in favor of any particular company only; whatever change was adopted would have to apply to all competitors alike. This the American gentleman said they perfectly understood."

The Toronto *World* believes Canadian ore can be laid down at the furnaces for \$2 to \$2.50 per ton, or one-half of what it costs laid down, say, at the furnaces of Pennsylvania or Ohio. It is admitted that labor would cost nearly the same in both countries, whatever difference there is being in favor of Canada, but that the American iron works secure their coke at \$3 to \$4 per ton less than it can be obtained for in Canada. This may be so in Toronto, but if iron works be established in the vicinity of the coal mines of Nova Scotia, where iron ore of every variety is to be procured, coke can be had as cheaply as anywhere in the United States. It is very unlikely indeed that the Dominion will allow itself to be saddled with a fancy tariff on iron in order to force the growth of works at points as far removed as possible from the coal fields of the Dominion. The proposal to import coke from the United States at \$8.10 per ton to manufacture iron in Canada is sufficient to show the hollowness of the whole movement. The attitude of these Cincinnati gentlemen, and especially the extravagant bonuses they demand, looks

a great deal like an attempt to prevent the establishment of the manufacture of iron in Canada.

Proposed Bureau of Labor Statistics.

Senator Blair has introduced a bill, suggested by the investigations of his committee during the past summer, to establish a Bureau of Statistics of Labor. The text of the bill will explain its provisions, as follows:

Be it enacted, &c., That there shall be in the Department of the Interior a bureau to be called the Bureau of Statistics of Labor.

Sec. 2. That the officers of the Bureau of Statistics of Labor shall be a chief, nominated by the President and confirmed by the Senate, and a first clerk, appointed by the chief of the bureau. The chief of the Bureau of Statistics of Labor shall receive an annual salary of two thousand five hundred dollars, and the clerk an annual salary of one thousand six hundred dollars.

Sec. 3. That the bureau shall collect, assort, arrange and present to the Secretary of the Interior, on the first day of December in each year, in a condensed and comprehensive—and, when practicable, in a statistical—form pertinent information relating to all departments of labor and production in the United States, especially in relation to the pecuniary, industrial, social, educational and sanitary condition of the laboring classes, and to the permanent prosperity of the productive industry of the whole country, and the Secretary of the Interior shall lay the same before the two Houses of Congress with his annual report.

Sec. 4. That the chief of the bureau shall have power to send for persons and papers and to examine witnesses, under oath, orally and by deposition, before himself or any assistant or magistrate to be by him designated, and such witnesses, when they fail to produce such papers or to testify voluntarily, may be summoned in the same manner and paid the same fees as witnesses in the courts of the United States where they shall reside; but no witness shall be required to produce papers or to disclose the condition of his private business or affairs against his will, provided he make oath that in his belief the same would injure his person or estate.

Sec. 5. That the chief of said bureau may employ such assistants and incur such expense, not exceeding fifteen thousand dollars in each year, as may be necessary to be incurred in the discharge of the official duties of said bureau, but no assistant shall be paid more than four dollars per day in addition to his necessary traveling expenses, and no expense shall be incurred for information when the same can be obtained gratuitously and in authentic and reliable form.

Hollanders Denouncing Free Trade.

WASHINGTON, December 29.—A report received at the State Department from Consul Eckstein, at Amsterdam, shows that a movement in favor of a protective tariff in Holland has been initiated by the Helmond Chamber of Commerce and Manufactures. In a petition addressed by the chamber to the King of the Netherlands, it is represented that the advantages promised to the nation when the free-trade system was adopted have not been realized, while the prejudicial consequences, felt in a high degree from the very beginning, have now reached their climax and threaten Dutch industry with complete ruin; that the great extension of navigation anticipated by the advocates of free trade, and which expectation largely conducted to the introduction of the system, have not been verified, but that, on the contrary, a comparison with protected Belgium furnishes most discouraging results.

The figures given show that the tonnage of vessels arrived in the ports of Amsterdam and Rotterdam increased from 796,000 tons in 1846 to 2,570,000 tons in 1881—about 320 per cent—while the tonnage of Antwerp increased from 330,000 tons to 2,938,000 tons, or nearly 900 per cent, in the same period. The petitioners further say that the sugar trade, formerly so flourishing, has entirely fallen off, the coffee and tobacco trade has declined, and the linen drapery and retail business languish; that the prices of daily necessities have not diminished; that "whole branches of industry have been entirely ruined," while others "are tending to total decay;" that excessive importations have destroyed home markets and competition; that "important factories have been shut up and the wages in many others lowered;" and that these things must continue and the "unfortunate operative will at last experience the fatal consequences of free trade;" that even if the prices of necessities were diminished by free trade—which has not been true thus far—the operative can realize no benefit therefrom, unless his means bear a favorable proportion to his requirements; that, for example, the man who earns 15 cents per hour in a country where bread costs 12 cents per loaf is better off than the man who earns 20 cents per hour in a country where bread is only 10 cents per loaf; that wages are already too low—in Twente only 60 to 70 cents per day, and in Helmond 90 to 100 cents—and the least diminution means poverty and misery. The petitioners call attention to the scale of protective duties in France and Germany, and conclude as follows:

"For which reason they respectfully but urgently pray your Majesty that it may please your Majesty to bring in a bill to break with the system of free trade, and to enact, first, that the tariffs of import duties on foreign manufactured articles may be brought in accordance with the tariffs of the respective countries, and, second, that between Netherlands and her colonies a free and unencumbered commercial intercourse may obtain, and that as much as possible the same duties be levied in the colonies on foreign productions as such articles are subjected to in our Kingdom in Europe."

Consul Eckstein reports that, while the newspapers generally are opposed to protection and the merchants are inclined to free trade, the representatives of the industrial interests throughout the country, as well as the artisans and workingmen in all the manufactures, favor the movement initiated by the Helmond Chamber of Commerce. He says that the unsatisfactory financial condi-

tion of the Kingdom and the necessity of obtaining more revenue to meet necessary expenditures favor the movement for a protective tariff, and its advocates are hopeful of success. In conclusion, the consul expresses the opinion that a considerable increase in the duties on many articles of import may be resorted to, particularly as the States General, in session at the date of the report, had under consideration a bill increasing the duties on grain, lumber and tea.

Anti-Hungarian Movement in Pennsylvania.

A recent dispatch from Scottsdale, Pa., says that a war against the Hungarians has been begun, and the following circular has been posted throughout the coke country:

To the Citizens of the Commonwealth of Pennsylvania: One of the most degrading impositions upon the people of this Commonwealth is the wholesale importation of Slavonians, erroneously known as Hungarians, into the Connellsburg coke regions; a pernicious custom which must end immediately and the serfs be returned for the following reasons:

These beings are crowding out our own miners and laborers, who are established, tried and good citizens, from employment and homes.

They will not become naturalized citizens, and in a limited time will return to Hungary with all the cash they can save, thereby draining the district of many thousand dollars annually.

They are extremely filthy in their habits, living on what American people could not eat.

Their morals are the lowest of any Caucasian race, being the lowest of any class of laborers that ever inhabited this country, living in a state of promiscuity, regardless of marital relations.

They are unscrupulous in all their transactions.

Their intelligence is the lowest in the scale of any class of people in this country to-day. Only about 5 per cent. can read and write, being far below the average Chinaman. Much time and labor have been lost by all classes trying to elevate this people against their will, but all without avail. Their habits grow worse the longer they stay, until they can no longer be endured. Forbearance has ceased to be a virtue. People who are degrading American labor, an injury to our commerce and a blot on the Commonwealth, will not be endured. American labor as well as American manufacture must be protected.

CITIZENS.

Steel Rails for Portugal.—A recent issue of *Iron* says: An adjudication took place at Lisbon on December 3 for 11,200 of steel rails and accessories required by the Southeastern Railway of Portugal, in order to complete the extensions now being carried out by the Government. Seven tenders were presented, but five were disqualified because of the necessary documents not being found in order. The remaining two quoted as follows per 1000 kg., delivered to Lisbon:

| Bochum Verein. | Société Cockerill. |
|--|--------------------|
| France. | France. |
| Steel Rails..... 121.00 | 139.80 |
| Accessories..... 198.00 | 206.80 |
| Points and crossings, per set.... 733.50 | 785.00 |

The contract is, of course, adjudged to Bochum, and the price appears to be the lowest on record, since, if we take into consideration the land and sea freight, the net price at the works cannot exceed 100 francs per 1000 kg. It is useful to note that, while four German makers and two Belgian came forward, only one English tender was presented. An interesting feature, and one that should be borne in mind by English manufacturers, was the fact that the rigorous conditions and specifications so strongly objected to by English makers were accepted without reservation by their foreign competitors. It is to be feared that the business for the large quantity of rails that will be required in the Peninsula will, as a natural consequence, go to German or Belgian makers. John Cockerill & Co. have lately secured contracts for about 3000 tons of bridge-work required for the extensions of the Minho and Douro Railway.

Trade with the Argentine Republic.—United States Consul Baker, at Buenos Ayres, reports to the State Department, under date of October 1, 1883, the condition of trade between the United States and the Argentine Republic during the preceding year. According to this report there has been a falling off in the total trade of \$263,672 since 1881, although the imports from the United States during the year (\$4,930,417) exceeded by \$799,996 the imports of 1881 (\$4,130,421). The value of the imports from the United States during the past year exceeded that of the exports by \$2,069,208. With respect to the general trade Mr. Baker says that, although the custom house returns show an increase in the value of imports during the last year of \$799,996 over the returns of 1881, yet there is nothing particularly encouraging to our trade in these figures. The increase, he says, was principally in such articles as lumber, kerosene, starch, &c., which are of prime necessity, and in which we have little competition with other nations. In other lines of merchandise, except agricultural implements and railway machinery, he says the United States have made but slight inroads, if, indeed, any at all, upon the monopoly which France and England enjoy. Mr. Baker makes some suggestions with regard to the necessities of the commerce of the United States with the South American States as follows: "We need close and regular steam communication; we need more intimate business relations, by means of branch houses or direct agencies; we need more favorable banking facilities; we need a more satisfactory system of trade credits. Without these it is almost useless for us to attempt any formal competition with England and France for the imports of the Argentine Republic."

An African Sea Project.—At a meeting of the French Society of Civil Engineers, held in November, M. Rondaire, describing his plan for the formation of an inland sea in Africa, showed that it would lie south of Tunis, and would cover what is now known as the Basin of Chotts. These basins are three large depressions near the Gulf of Galos, which were evidently the bed of an ancient sea, as is proved by the large deposits of salt found there. M. Rondaire found on investigation that the bed was some 30 m. below sea level. The formation of this sea, he said, would drain and make habitable a large tract of country which is at present nothing but salt marshes. The vapor arising from the sea would fertilize Algeria by striking the neighboring snow-capped mountains and condensing as rain. Regarded from a political standpoint, this sea would put a stop, in great measure, to the incursions of the Arabs, to whom that section of the country now seems a strong hold into which they can retreat with perfect safety. To compensate for the loss by evaporation, it will be necessary to have a constant inflow of 187 c. m. (6613 c. ft.) per second. The amount of excavation necessary will be about 260,000,000 c. m., at a cost of some 130,000,000 francs. The source of revenue to a company undertaking this would lie in the valuable land grants, the salt deposits, the rights of transportation, &c.

A Substitute for Prison Contracts.—The Legislative Committee of the Labor Congress of New Jersey have agreed upon the following points in reference to their proposed substitute for the system of contract prison labor: First, the abolition of the contract system; second, that as many prisoners as possible shall be employed in producing the articles necessary for the State institutions; third, that eight hours shall constitute a day's work in prisons and reformatories, and that two hours each day shall be devoted to the moral and intellectual instruction of the inmates; fourth, that a portion of the earnings of prisoners be placed to their credit, &c., are deducted, the balance shall be paid to their wives and families, if they have any, and if they have none, to themselves at the expiration of their term of servitude; lastly, that the balance of the prisoners not needed in work for the use of the State be employed under the "piece price system"; that no more than 20 be employed at one branch of business, and that a board of appraisers, consisting of two wage workers, two business men and one merchant, be appointed to appraise the value of the products of prisoners, to prevent such goods going upon the market at less than market rates.

A Pittsburgh dispatch says: "Andrew Carnegie, of the Edgar Thompson Steel Works, is carrying out his promise to his men that if they continued at work he would furnish them with family supplies cheaper than they could purchase them in Braddock. Notices have been posted at the works that coal will be furnished the employees at 6, 7 and 8 cents a bushel, according to the distance hauled. This is about 2 cents under the market price for an inferior quality. Many of the workmen are indebted to the company in whole or part for the houses in which they live. Mr. Carnegie has informed all such that on payments on this account falling due in January 25 per cent. will be remitted. He is also taking steps to carry out his promise to start a store and sell goods of

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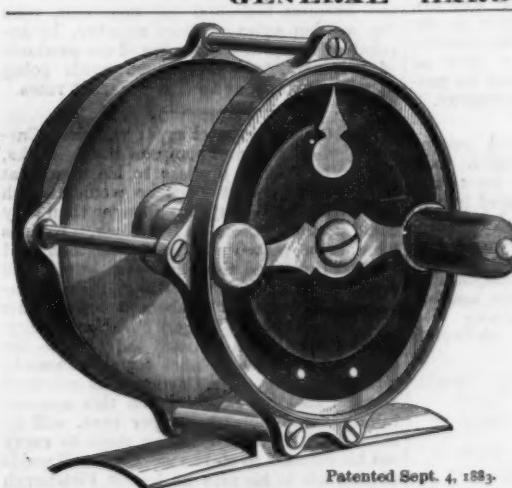
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CENTRAL ACTION,
RAISED PILLAR
TREBLE
Multiplying Reel.

FLUSH BALANCE HANDLE
ADJUSTABLE CLICK.

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For heavy bedsteads, book-cases, flower stands, refrigerators, safes, sideboards, desks, or very heavy furniture. Also for heavy ice chests, magazine boxes, stove trucks, heavy showcases, beer boxes, or any very heavy weight. Especially adapted for use in beer bottling, fruit canning, tobacco or warehouse establishments, where heavily-loaded tables need to be moved.

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Forty Dairy Trucks in use. Just what we wanted.
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Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

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more popular than any Powder now in use.

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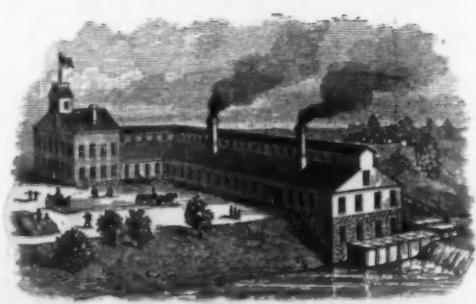
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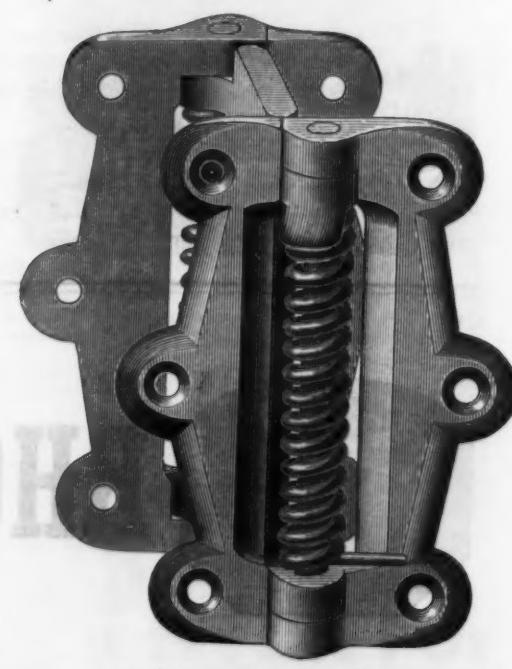
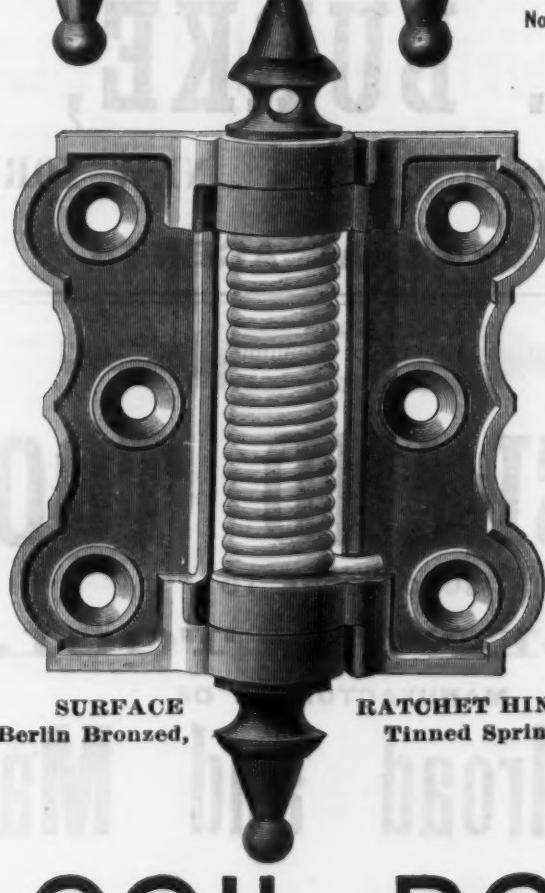
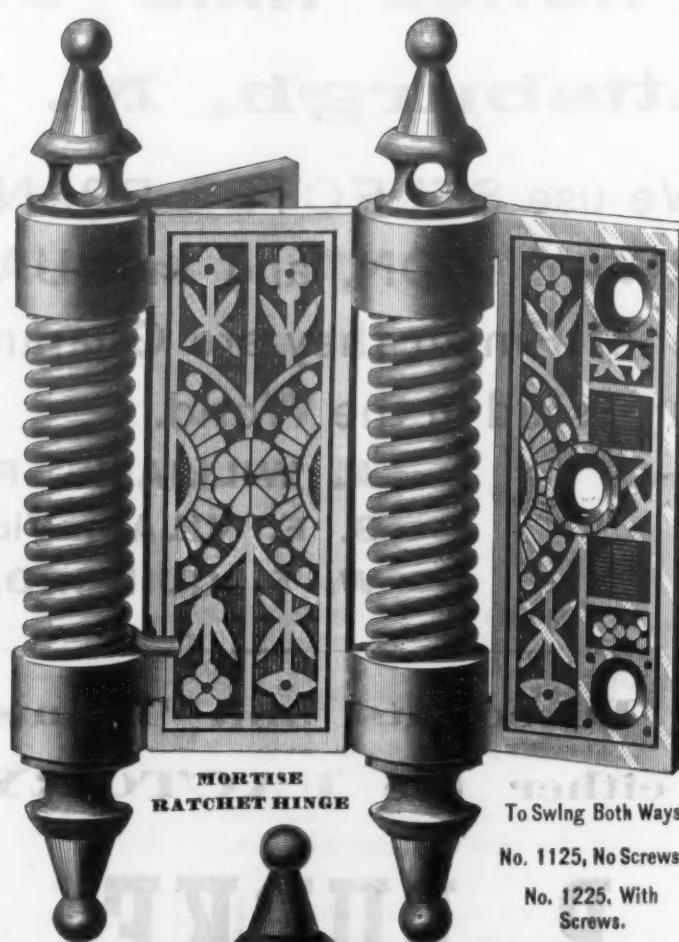
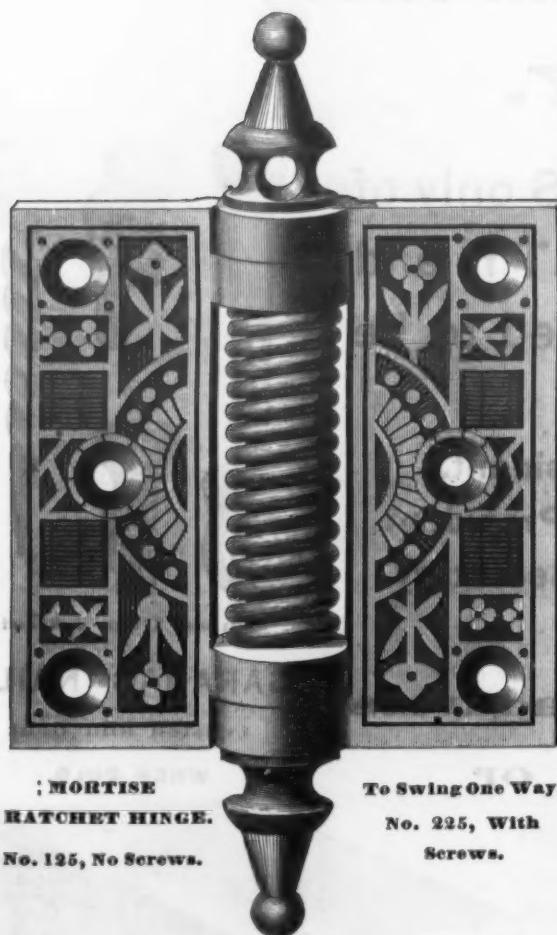


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SARGENT'S PATENT

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ROD AND COIL DOOR SPRINGS,

"S" DOOR SPRINGS.



Put the Brackets on as seen in the cut, and on the opposite side of the Steel Rod for a door swinging the other way.

Put the ratchet wheel in the bottom bracket, with the teeth toward the Pawl or Stop.



Apply the wrench to the end of the rod below the bottom bracket, twist the rod until sufficient power is obtained, and then push the pawl into the teeth of the ratchet wheel.



This spring can be put on, and ANY AMOUNT OF POWER APPLIED easily and quickly, and it is equally applicable to closing the door or holding it open. By simply SLIDING THE CATCH the power can be instantly removed and the door allowed to act entirely free.

The same Spring is suitable for a Right or Left Hand Door.

THE VICTOR.



BEST in the MARKET

The mechanism for adjusting the Victor and Champion is the same.

Put on the spring diagonally, with the top always to the right.

Put on the top bracket first, and as near the edge as possible.

Then put on the bottom bracket, which also should be near the edge.

To tighten the spring, lift the collar or fastening; apply the wrench and tighten the spring as desired by turning to the left; when taut as wished, drop the collar back to place.

Easily adjusted. No pieces to lose. Tension can be applied or released instantly.



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Stanley Works, New Britain, Ct.

Landers, Frary & Clark, New Britain, Ct.

Eaton, Cole & Burnham Co., Bridgeport, Ct.

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Livingston & Co., Pittsburgh, Pa.

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Burrows, Stewart & Milne, Hamilton, Canada.

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Buffalo Hardware Co., Buffalo, N. Y.

Sidney Shepard & Co., Buffalo, N. Y.

Enterprise Mfg. Co., Philadelphia, Pa.

E. & F. Fairbanks & Co., St. Johnsbury, Vt.

Buffalo Scale Co., Buffalo, N. Y.

Jos. Barnhurst, Philadelphia, Pa.

Van Wagoner & Williams, New York, and many others.

The Chancellor at Trenton last week granted an interlocutory injunction restraining the New Jersey Zinc and Iron Company from further working the mining property in Sussex County, ownership of which is claimed by Charles W. Trotter and others. The case has been before the courts for several years, and the property involved is valued at several millions.

The Lamberville Iron Works have bought out the interest of Mr. Ashbel Welch, and will continue the manufacture of their patent automatic cut-off engine and other machinery. Having of late increased their facilities, they are prepared to promptly fulfill all orders.

INDUSTRIAL ITEMS.

MAINE.

The Portland Rolling Mills, damaged by fire some time since, have been repaired and work resumed, except in the puddling mill. The main building has been extended from its former length, 52 feet, and otherwise improved very much for convenience in their manufacturing. At present 225 men are employed, and that number will be materially increased when the new machinery, which has just arrived, is placed in position for the manufacture of horseshoes, an industry which is entirely new to Maine. This machine turns out shoes at the rate of from 20 to 40 per minute, according to the speed of the machine, and so perfect is its mechanism that they are practically ready for use as soon as they leave the machine.—*Boston Commercial Bulletin*.

MASSACHUSETTS.

The Washburn Iron Works, at Worcester, have given a contract to Messrs. William Allen & Sons, of that city, for five 100-horse-power boilers.

The extensive iron foundry buildings on Centre street, Brockton, have been leased to Hinman, Frank Dow and Fred. Stevens, all of Boston, who will engage in the foundry business.

At Warwick, Franklin County, preparations are in progress for the opening of an iron mine on Beech Hill. A carload of the ore is to be taken out, and if it is found to be of sufficient value to make the mine profitable, work will be begun.

The Douglas Ax Company, at East Douglas, have purchased a new 60-horse-power engine that they are to put in at the lower village, and the one that has been used here is to be put in use at the Lovett shop. Most of the works, with the exception of Gilboa, will then be run by steam.

It is reported that New York capitalists are planning to erect an immense rolling mill in Lowell, near the intersection of the Framingham and Lowell Railroad and the connecting branch of the Lowell and Andover. Some 1500 hands will be employed.

NEW JERSEY.

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PENNSYLVANIA.

The contract for the materials for the entire construction of another steel ship has been awarded to Lloyd & Lindsay, 328 Walnut street, Philadelphia. The angles and bulk deck beams will be made, as before, by Messrs. A. & P. Roberts & Co. (Pencoyd Iron Works), and the hull plating and boiler plates by Messrs. Grove, Grier & Co., Limited, Danville Mills.

James Hooven & Sons and J. H. Boone & Co., iron manufacturers of Norristown, have posted notices in their mills announcing that on and after January 1, 1884, the price of puddling will be reduced to \$3.75 per ton, and that the wages of all other employees will be reduced in proportion. The present price paid for puddling is \$4 per ton.

Red Bank Furnace, owned by Alex. Reynolds' Sons, will probably shut down January 15th, and will remain closed until the iron trade brightens up somewhat.

The rolling mills of McLanahan, Smith & the Hollidaysburg Iron and Nail Company, at Hollidaysburg, have shut down on account of lack of orders. It is rumored that they will start up in January.

Macungie Furnace, at Macungie, in spite of the efforts of the managers, chilled last week and must be cleaned out.

The mill of the Maidencreek Iron Company, at Blandon, has shut down on account of business depression.

No. 7 Furnace of the Thomas Iron Company, at Albertus, made last week 347 tons of iron, of which 70 per cent. was foundry iron. The materials used in the manufacture of the iron per ton were: Coal, 1 ton, 8 hundredweight; ore, 1 ton, 17 hundred-weight; stone, 1 ton, 10 hundred-weight. The ore consisted of native hematite, mixed with Jersey magnetic, the last being not quite half. All the coal was anthracite. The furnace is 60 feet high and 15 feet bosh, and has the last 13 weeks made an average of 300 tons. The superintendent is Mr. D. H. Thomas.

The tin-plate and metal house of Merchant & Co., of Philadelphia, has admitted into partnership Mr. Barthold Bernheim, who has been the representative in Philadelphia of the well-known firm of Naylor & Co. Merchant & Co. having increased their facilities, purpose to extend their tin-plate and metal business proportionately.

PITTSBURGH AND VICINITY.

The report is denied that the hoop iron works of Wm. Clark & Co., on Thirty-fifth street, have determined to close their works on account of a scarcity of fuel and orders. A call at the office of the firm developed the fact that there is not only no scarcity of fuel at the works, but the firm have all the orders they can conveniently fill working single turn.

Edith Furnace, of the Manchester Iron and Steel Company, has been backed up, owing to a difficulty in regard to the ore supply.

A charter has been issued to the Finney Electric Light Company, with a capital stock of \$25,000. Charles L. Fitzhugh, John W. Chalfant, Albert H. Childs, J. R. Finney,

W. A. McIntosh and David F. Henry, of Allegheny County, and Frank Rehm, of Philadelphia, are the directors.

The Pittsburgh Furnace Company's new furnace, at Rankin Station, on the Baltimore and Ohio Railroad, will be ready to start work on January 1.

The 10 per cent. reduction offered by Graff, Bennett & Co. at the Clinton Mills, on the South Side, to the engineers and laborers, has been compromised by the engineers suffering only a 5 per cent. reduction and the laborers 10 per cent., with the understanding that they will receive their old wages as soon as the price of iron advances sufficiently to justify the firm to make the increase.

The Volta Iron Works, at Apollo, which have been idle the past two weeks while the men were out reflecting upon a reduction of 10 per cent., resumed work on Saturday, the men accepting the cut.

The machinery of the French Spiral Spring Company has all been removed to their new quarters, corner Smallman and Twenty-fifth streets.

Last week papers changing the composition of the corporation of Mackintosh, Hemphill & Co., Limited, were filed. The capital of the company consists of paid-up stock to the amount of \$600,000 and personal property valued at \$350,000. James I. Bennett and John Graff indicate by the proper documents that they are no longer interested in the firm.

Robinson, Rea & Co., machinists, of the South Side, have issued an order, to go into effect on Saturday, limiting the day's work to nine hours.

Mr. H. L. Shaffer has assumed sole control of the foundry formerly known as the Pittsburgh Smelting and Tuyere Company, and has reorganized the company under the name of the H. L. Shaffer Foundry Company. The firm, as heretofore, will continue to manufacture castings for blast furnaces and Bessemer steel works.

INDIANA.

The Hoosier Saw Works, of Indianapolis, Mr. W. B. Barry, proprietor, report trade as fair. Mr. Barry is making a number of changes and improvements in his machinery to better facilitate the manufacture of the Hoosier saws.

The American Paper Pulley Company, of Indianapolis, have made the following shipments: One 45 x 10 inch and one 30 x 10 inch pulley to Williamsburg, Ky., and 24 different sizes to Gleason & Allen, Terryville, Conn. They are running a small force, but state the outlook to be very promising.

Micajah C. Henly, manufacturer of roller skates, of Richmond, has in course of erection an addition to his factory measuring 24 x 36 feet, two stories high, in which he will place a considerable amount of new machinery. Mr. Henly has been compelled to this step by increasing business. A new 40-page catalogue of these skate goods will soon be issued.

Messrs. E. C. Atkins & Co., of Indianapolis, manufacturers of Diamond and Dexter crosscut saws, are busy and employing the full complement of hands. They report trade constantly increasing in the goods mentioned.

Messrs. Sedgwick Bros., of Richmond, report an increase of 25 per cent. over last year's trade. They have just received an order for 2000 feet of wire fencing for the public park at Sandford, Fla.

ILLINOIS.

The Chicago Rubber Works, of Chicago, have recently closed contracts with agricultural manufacturing companies for 600,000 feet of rubber belting, and with other parties for about 300,000 feet of rubber hose. The producing capacity of these works has recently been increased about 40 per cent. and they are reported full of orders.

The firm of C. A. W. Stokes & Co., Petersburg, has been reorganized under the title of the Blunt Press Drill Company, and will devote itself to the manufacture of Blunt press drills, in which it has lately made some important improvements. The company have also largely increased their capacity.

Among the new corporations licensed at Springfield last week are the Union Underground Wire Company, the International Street Cleaner Company, the Great Western Type Foundry, the E. P. Donnell Manufacturing Company, which will manufacture printers' and binders' supplies and machinery, and the Chicago Patent Lamp Collar Company, all of Chicago.

The Brown Corn Planter Works, of Galesburg, report a very satisfactory trade up to date. They recently shipped 20 sample corn planters to Northern Russia, from which country they are now receiving frequent orders.

MICHIGAN.

The Iron River Furnace Company is an organization recently formed, mostly of Fond du Lac capitalists. The company are already incorporated under the laws of Michigan, and the work of building a blast furnace has already begun at Iron River, the machinery being all purchased, the coal-kilns in the process of construction, &c. The members of the company are John S. McDonald, Alexander McDonald, John Spence and Louis Muentner, of Fond du Lac, Philip L. Anton, of Chicago, and John T. Jones, of Iron Mountain. The officers are: President, John S. McDonald; vice-president, Alexander McDonald; treasurer, Louis Muentner; secretary, John Spence; manager, John T. Jones. The capital stock is \$50,000, divided into 500 shares of \$100 each.

MISSOURI.

The Globe File Works, of St. Louis, are running to full capacity and report a month's work ahead. They will shortly put in a couple of new file-cutting machines in addition to those they have running now.

The Vulcan Steel Works will shut down their converting, blooming and rail departments early this month for an indefinite period. Their blast furnaces will continue in operation.



The Colliau Patent Cupola

Will pay for itself in one year in the economy of fuel, and will do more and better work than any other.

Write for Pamphlet Showing Results of
COLLIAU CUPOLAS
Now in Use by Leading Foundries.

ADDRESS

COLLIAU FURNACE CO.,

Foot of Mt. Elliott Ave., DETROIT, MICH.

LARGE HEADS.

CHAMPION Horse Nails,

Manufactured from very best NORWAY METAL, that will not SPILT OR FLAY, are accurately pointed, tough, strong and hold the shoe; soft enough to clinch easily, yet hard enough to drive without bending. Every nail uniform and true to size. They are used in thousands of shoes, with best of satisfaction, and especially liked by "Floor-men" for their good reliable driving. Made in two patterns, "LARGE HEADS" and "CITY HEADS".

QUALITY IS FULLY GUARANTEED.

LIST:
Nos 5 6 7 8 9 10
26c. 23c. 21c. 20c. 19c. 18c.

CHAMPION HORSE NAIL CO., APPLETON, WIS.

CITY HEADS.

**STILLMAN & CO.
Engraving
ON WOOD
N.W. COR. FRONT & VINE
CINCINNATI OHIO.**

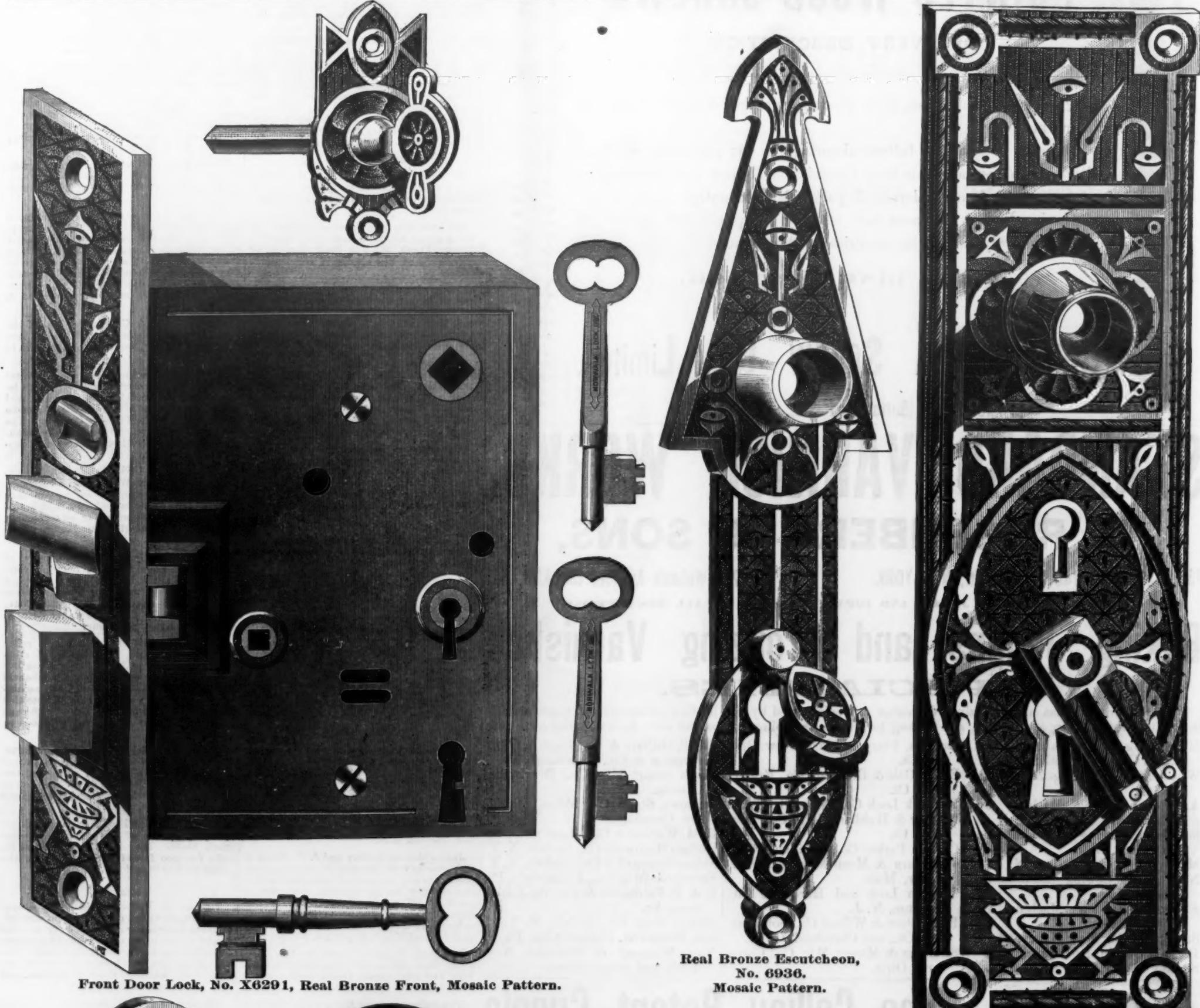
HOWARD IRON WORKS
BUFFALO, N. Y.

Manufacturers of

BENCH VISES,

Price Lists sent on application.

NORWALK LOCK COMPANY, SOUTH NORWALK, CONN.
 MANUFACTURERS OF DOOR LOCKS, KNOBS AND BUILDERS' HARDWARE.



Front Door Lock, No. X6291, Real Bronze Front, Mosaic Pattern.

Real Bronze Escutcheon,
No. 6936.
Mosaic Pattern.

Real Bronze Rose and Escutcheon Combined, No. 6954½. Mosaic Pattern. For Lock No. X6291.



Real Bronze Door Knob,
No. 6604.

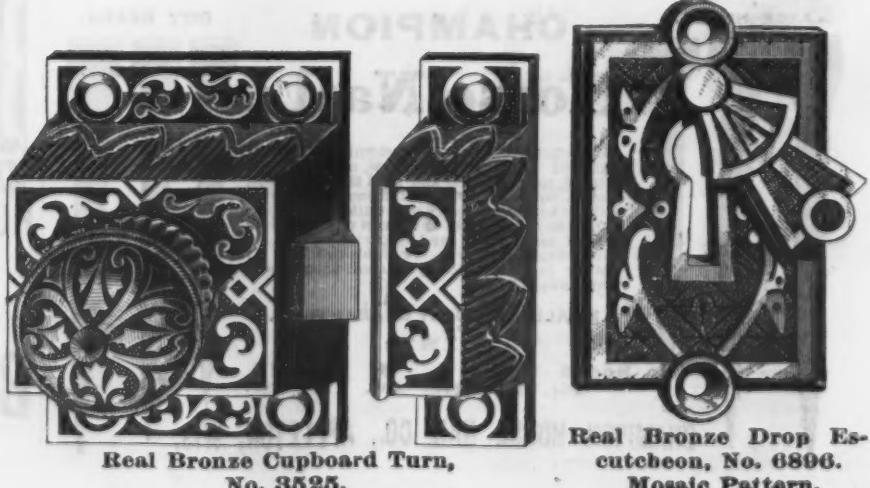
Real Bronze Flush Sash Lift, No. 711½.
Line Pattern.



Sash Lock, No. 4500.
Frost's Patent.



Real Bronze Door Knob,
No. 6718.



Real Bronze Cupboard Turn,
No. 3525.

Real Bronze Drop Escutcheon, No. 6896.
Mosaic Pattern.

JOHN F. LOVEJOY,

Formerly LOVEJOY & DRAKE,

General Eastern and Southern Agent for the Following and Other Manufacturers,

101 READE STREET, NEW YORK,

Iron, Heavy Hardware, Artesian, Oil Well and General Supplies:

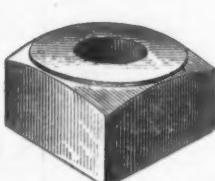
ELBA IRON & BOLT CO., Limited,

PITTSBURGH, PA.,

BAR IRON,



WASHERS,



Hot-Pressed Nuts,

Machine and Bridge Bolts.



TRACK BOLTS AND FISH PLATES A SPECIALTY.

A full stock always on hand and all orders promptly executed.
Contract work solicited.

J. H. McMAHON & CO., Pittsburgh, Pa.

CHAINS.



CHAINS OF EVERY DESCRIPTION ALWAYS IN STOCK,

COMPRISED

Traces, Log, Halter, Bright and Black Coil,
BOTH STRAIGHT AND TWISTED LINK.
PROOF AND CRANE CHAIN A SPECIALTY.

PLYMOUTH MILLS,

[ESTABLISHED 1830.]

RIVETS



OF EVERY DESCRIPTION.

Also Tacks, Burrs, Trunk and Clout Nails, Steel Wire Shanks and Fence Wire Nails or Staples.

BAGNALL & LOUD.

Wrought Iron



Tackle Blocks.

Larger diameter of Sheaves given for the same size rope than any other *Iron Block* in the market. The shells have rounded edges to prevent the rope from chafing. They are especially adapted for Railroad wrecking purposes.

SEND FOR CIRCULAR.



GILLESPIE TOOL COMPANY,

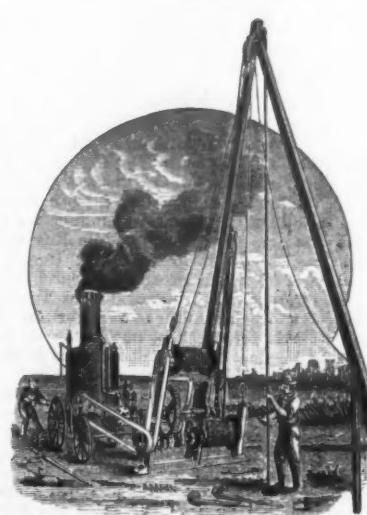
Pittsburgh, Pa.,

Artesian Well Machines,

VISES, CROW BARS,

Common Carriage Bolts, Sledges
and Blacksmiths' Tools, &c., &c.

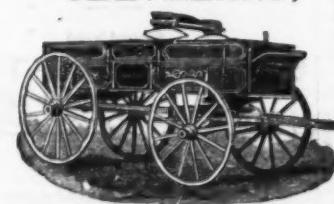
SEND FOR CATALOGUE.



CLEVELAND HARDWARE CO.,

CLEVELAND, OHIO.

WAGON



HARDWARE.

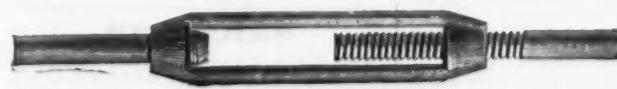
Have the largest facilities for manufacturing Wrought Iron Wagon Hardware in the country. Shears and Punches a specialty.

SEND FOR CATALOGUE.

WROUGHT IRON PIPE.
SHIP CHANDLERY HARDWARE,
TURN-BUCKLES, C. P. NUTS.



RIGHT AND LEFT HAND.



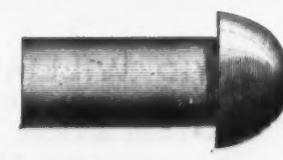
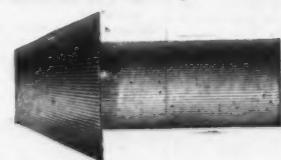
SWIVEL END.

Special attention is called to the above, quality of which is guaranteed.

BALTIMORE RIVET AND SPIKE WORKS.

WM. GILMOR, of WM.

Boiler, Bridge and Tank Rivets,



RAILROAD AND BOAT SPIKES.

All Goods Guaranteed in Quality.

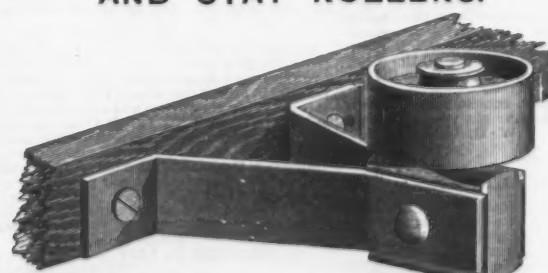
Best Iron Only Used.

SEND FOR SAMPLES.

CRONK HANGER CO.,

ELMIRA, N. Y.,

Wrought Iron Slide Door Hangers
(FOR WOOD TRACK),
AND STAY ROLLERS.



SEND FOR SAMPLE CASE.
Sample Door and Track Furnished Every Customer.

Catalogues and Prices on Application.

Export Trade a Specialty.

Special Notices.

RECENT BOOKS.

Adams.—Notes in Mechanical Engineering. By Henry Adams, 33 pages, 8vo, cloth, 1884, (London). \$1

The author of this book, a teacher of Mechanical Engineering in the city of London College, has rendered a service to students and others by issuing this note book. The notes are compiled from various sources and contain a large amount of formulae, definitions and valuable matter in brief form upon the principles of mechanics and the properties of materials; tools and their uses; general machinery; the different classes of the steam engine; hydraulic machinery and the operations of the pattern maker, founder and blacksmith in connection with all mechanical work.

Maw.—Recent Practice in Marine Engineering. By William H. Maw. Parts I, II, III, IV, V, VI, VII, VIII, IX, X and XI now ready.

CONTENTS OF PART XI.

Text : 1, Compound Oscillating Engines of the Paddle Steamers Prinses Marie and Prinses Elisabeth (concluded, with Illustrations in Text); 2, Hopper Dredger for Riga Harbor; 3, Compound Paddle Engines by the Société John Cockerill; 4, Compound Engines of H. M. Steamships Satellite and Conqueror (with Illustrations in Text); 5, Engines of the Anthracite; Perkins' System (with Illustrations in Text); 6, Compound Engines of H. M. Steamships Boadicea and Bacchante (with Illustrations in Text); 7, Compound Engines of the Steamship Assyrian Monarch (with Illustrations in Text); 8, Twin-Screw Triple Expansion Engines, by Messrs. Rankin and Blackmore (with Illustrations in Text); 9, Compound Engines for Steam Launch (with Illustrations in Text); 10, Engines of the Steamship City of San Francisco; 11, The Granton and Burntisland Ferry, North British Railway.

Plates : 147, General Arrangement of the Engines and Boilers of the Steamship Assyrian Monarch; 148, Compound Engines of the Steamship Assyrian Monarch; 149, Compound Engines of the Steamship Assyrian Monarch; 150, Details of Compound Engines of the Steamship Assyrian Monarch; 151, Details of Condenser and Boilers; 152, Twin-Screw Triple Expansion Engines; 153, Compound Engines for Steam Launch; 154, Compound Engines of the Steamship City of San Francisco; 155, Compound Engines of the Steamship City of San Francisco; 156, Boilers and Propellers of the Steamship City of San Francisco; 157, Paddle Steamer Midlothian; Granton and Burntisland Ferry, North British Railway; 158, Compound Engines of the Paddle Steamer Midlothian; Granton and Burntisland Ferry, North British Railway; 159, Auxiliary Engines of the Paddle Steamer Midlothian; 160, Compound Engines of the Steamships Teucer, Orestes, Laertes, &c.; 161, Details of Engines of the Steamships Teucer, Orestes, Laertes, &c.; 162, Boilers of the Steamships Teucer, Orestes, Laertes, &c.

Hodgson, F. T.—Handsaws, their use, care and abuse; how to select and how to file them. \$1.

Lockwood, T. D.—Electrical Measurements and the Galvanometer; its construction and uses. \$1.50.

Vogdes, F. W.—The Architect's and Builder's Pocket Companion and Price Book. New, revised and enlarged edition, 32mo, cloth, \$1.50, Pocket-book form. \$2.

Wahl, Wm. H.—Galvanoplastic Manipulations. A practical guide for the Gold and Silver Electroplater and Galvanoplastic Operator. \$1.50.

Internal Revenue Laws in Force since March, 1879; Reprint, with Subsequent Laws. 8vo, paper.

MacCord, Prof. C. W.—Kinematics, or Mechanical Movements. \$5.

Hoffer, R.—Practical Treatise on Caoutchouc and Gutta Percha. Translated by W. T. Brant. \$2.50.

Maw, Wm. H.—Recent Practice in Marine Engineering. Parts I to VII, inclusive. Each. \$1.

Electricity. Robt. M. Ferguson. Revised edition, 32mo, cloth, \$1.50.

Materials of Engineering. Part II. Iron and Steel. R. H. Thurston. 8vo, cloth, \$5.

History and Uses of Limestone and Marbles. S. M. Burnham. 8vo, cloth, \$6.

Recent Wonders in Electricity, Electric Lighting, Magnetism, Telegraphing, &c. 8vo, paper, \$3.

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DAVID WILLIAMS,
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FOR SALE.

Clean stock of Hardware and Stoves at low cash value. Sale will carry good will of an established business, in central location. Best street for retail or wholesale trade in Minneapolis. Valuable store lease and agency of choice Stoves. Stock and fixtures, will not exceed \$10,000 to \$12,000. Ready to move, no overhead, long attention to business and outside matters. Parties to secure should apply early and be ready to close trade in January, 1884, if possible. Address Box 375, Minneapolis, Minn.

No. 266 SOUTH FOURTH STREET, PHILADELPHIA, December 31, 1883.

In accordance with our Articles of Partnership, the firm of Blaikie & Walbaum is this day dissolved in consequence of the death of Mr. Thomas Blaikie.

The business will be continued by me under the style of W. H. WALBAUM & CO., on precisely the same basis as heretofore; that is to say, I shall continue to do a General Merchandise Brokerage business only, devoting special attention to Metals, Iron, Ore, Railroad Supplies and Fire-Brick, continuing the Agencies for the North Lonsdale Iron and Steel Company, Bessemer & Co.'s Dinas Fire-Brick, as well as all the other foreign and domestic connections made by Blaikie & Walbaum.

Requesting the favor of a continuance of your valued support, I remain, dear sir, yours respectfully,

W. H. WALBAUM.

REFERENCES BY PERMISSION :

Messrs. PETER WRIGHT & SONS, Philadelphia.
Messrs. JOHN B. ELLISON & SONS, Philadelphia.
First NATIONAL BANK, Philadelphia.
PENNSYLVANIA STEEL COMPANY, Philadelphia.
Messrs. BURNHAM, PARSH, & CO., Philadelphia.

Messrs. ALAN WOOD & CO., Philadelphia.
CHESTER ROLLING MILLS, Chester, Pa.
Messrs. CARNEGIE BROS. & CO., Limited, Pittsburgh and New York.

Messrs. W. D. WOOD & CO., Pittsburgh.
CLEVELAND ROLLING MILL CO., Cleveland, O.

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| One 20-in. Cyl by 42 in. Stroke Corliss Engine. |
| One 12-in. " 42-in. " |
| One 8-in. " 30-in. " |
| One 16½-in. " 20-in. Upright Engine. |
| One 12-in. " 12-in. " |
| One 4-in. " 6-in. Rider |
| Two 5½-in. " 7-in. " cut off. |
| One 6-in. " 10-in. Hutchinson & Alexander |
| One 12-in. " 15-in. Supplied Steam Eng. Co. |
| One 6-in. " 10-in. Diamond Drill Co. |
| One 16-in. " 32-in. |
| One 20-in. Portable Engine and Boiler, on Wheels |
| One 6-in. " 12-in. Holstine Engine and Boiler. |
| One 50-H.P. Locomotive Boiler. I. P. Morris. |
| One 12-in. " 15-in. Horizontal Tubular Boiler. |
| One 45-H.P. " 50-H.P. Plain Cylinder Boiler. |
| One 45-in. " 50-in. Prentice. |
| One 8 ft. by 40 in. Upright Boiler, 22 H.P. |
| One 7 ft. by 30 in. " 15 " |
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contains the names, address, financial standing and paying qualities of over 150,000 dealers in

Hardware, Iron, Metals, Machinery, Cutlery, Guns, Brass Goods, Machinists, &c.,

IN THE UNITED STATES AND CANADA.

This list is NEW, having been carefully compiled within the past three months by over 20,000 Special Local Correspondents and Merchants in the Trade, at an expenditure of many thousands of dollars.

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This Agency is devoted to and managed wholly in the interest of this special branch of business.

The "Blue Book" is published twice a year. Terms of subscription, &c., made known on application to either of our offices.

THE JOHN W. EALY COMPANY,

79 Dearborn St., CHICAGO.
51 Chambers St., NEW YORK.**Notice.****TRADE-MARK "WASHOE."**

This is to notify those interested in the question of the ownership of the Trade-Mark "Washeo," that a suit has been for some time pending between Washoe Mfg. Co. and H. H. Trener, before the Court of Interferences of the Patent Office in Washington, and that on August 25, 1883, the Examiner of Patents decided that the Trade-Mark "Washeo" belongs to the Washoe Mfg. Co., and that the claim of H. H. Trener to the same was null and void. This decision was affirmed by the Commissioner of Patents on November 1, 1883. Notice is now hereby given to all parties, persons or companies manufacturing, buying, selling, Pick Axes or other Tools, branded "Washeo" without legal authority from the undersigned, owner and proprietor of the said Trade-Mark "Washeo," that they will be held legally responsible therefor.

WASHOE MFG. CO.

JOHN J. ANDERSON, Pres. and Treas.

NEWARK, Nov. 9, 1883.

BARGAINS.**Engines, Boilers, Machine Tools.**

700-lb. Ferris & Miles Steam Hammer.

Send for List.

Wanted.—12-ft. Boring Mill.

72-in. x 72-in. x 25-ft. Planer.

LOVEGROVE & CO.,

152 N. Third Street, Phila., Pa.

LOCATION WANTED.**REMOVAL OF BUSINESSES.**

We are looking for the most desirable location for manufacture of Agricultural Implements and Machinery Specialties. Must have unexcelled facilities for securing raw materials, Iron, Coal and Lumber cheap, and low freights, East, West and South, on manufactured goods.

Desirable proposition from individuals or business committed, giving all particulars, advantages and special inducements offered to secure a long-established, prosperous and growing manufactory will be considered.

Address, E. W. ROSS & CO., Fulton, N. Y.

Hardware.

An excellent opportunity to engage in the wholesale trade for one who can command \$25,000, or would like to join hands with a good live concern in the South or Northwest, and put in as capital the stock, which is in excellent condition and well assorted.

Address, "C. W. C."

Office of The Iron Age, 35 and 38 Clark St., Chicago, Ill.

Estimates Furnished

and contracts taken for power shears, power punches, steam hammers, steam riveters, plate planers, accumulators, cranes, hydraulic presses, &c., upon the most favorable terms to consumers. Work guaranteed.

B. GRAVES LOUDEN,

2nd St. and Washington Ave., Philadelphia.

Wanted to Trade.

\$400 worth of property, consisting of 15 Building Lots, in a village ½ miles from Chicago limits, 10½ miles from Chicago. Con. Houses—each lot 26½ x 132 feet, covered, for a stock of Hardware, Soves, &c., at Chicago jobbing rates. The Real Estate will pay to hold, and will stand investigation. A Stock in a Western town preferred.

Address, "MERCHANT."

Office of The Iron Age, 35 and 38 Clark St., Chicago, Ill.

Wanted.

(Old)

IRON AND STEEL ROPE,

and Iron and Steel of any kind.

Address, MATTHEW GILL, JR., & CO., 1440 North Ninth Street, (below Thompson Street), Philadelphia.

LEIGH'S DISCOUNT BOOK

Specially arranged for the use of the

HARDWARE TRADE.

Acknowledged by ALL the best work of the kind ever published. Price by mail ONE DOLLAR.

Address, E. B. LEIGH,

See's The American Brake Co., St. Louis, Mo.

REDUCTION IN PRICE.**JENNINGS' DISCOUNT TABLES.**

(2 to 2½ and all the combinations.)

We find them very correct and wonderfully labor saving."

Your discount tables are all you claim for them."

T. W. Ross with Russell & Erwin Mfg. Co., Toledo, O. Counting House Edition, postage paid.

Penny Edition, postage paid.

Pocket Edition, postage paid.

Currency may be sent by mail at publishers' risk.

Address, E. H. JENNINGS, Deep River, Conn.

Trade Report.**BRITISH IRON AND METAL MARKETS.**

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, Jan. 2, 1884.

Scotch Pig.—The market is weaker and prices have declined. We quote makers' prices as follows:

| | |
|-----------------------------------|------|
| Coltness, alongside, Glasgow..... | 55/ |
| Langloan, " " | 54/ |
| Gartsherrie, " " | 50/6 |
| Summerlee, " " | 52/6 |
| Carnbroe, " " | 51/6 |
| Glengarnock, " Ardrossan..... | 51/6 |
| Eglinton, " " | 45/6 |
| Dalmellington, " " | 48/ |
| Shotts, " at Leith..... | 54/ |

Lighterage from Ardrossan to Glasgow is 1/8 ton.

Cleveland Pig.—The market is quiet; we quote as follows, f.o.b. shipping ports:

| | |
|---------------------------------|------------|
| Middlesboro' No. 1 Foundry..... | 40/ |
| " No. 2 " " | 36/ |
| " No. 3 " " | 36/ @ 36/3 |
| " No. 4 Forge..... | 34/6 |

Bessemer Pig.—The market is weak. W. C. Hematites are quoted 45/ @ 46/ for mixed lots, equal parts, Nos. 1, 2 and 3, f.o.b. shipping ports.

Manufactured Iron.—The market continues irregular. We quote at works.

| | 2 | 3 | 4 | 5 | 6 |
|---------------------------------|---|----|----|----|----|
| Staff. Ord. Marked Bars..... | 7 | 10 | 10 | 10 | 10 |
| " Medium..... | 6 | 5 | 5 | 5 | 5 |
| " Common..... | 6 | 6 | 6 | 6 | 5 |
| Hoops, 20 W. G. and over..... | 7 | 0 | 0 | 0 | 7 |
| " Common Best..... | 7 | 0 | 0 | 0 | 7 |
| " Medium..... | 6 | 5 | 5 | 5 | 5 |
| " Common..... | 6 | 10 | 0 | 0 | 0 |
| Sheets, 20 W. G. and under..... | 7 | 15 | 15 | 15 | 15 |
| " Ordinary Best..... | 8 | 15 | 0 | 0 | 0 |
| " Common..... | 8 | 0 | 0 | 0 | 8 |
| Welsh Bars..... | 0 | 5 | 6 | 7 | 7 |

Steel Rails.—The market is quiet and prices are steady. We quote Ordinary Sections £4. 7/6 @ £4. 12/6, f.o.b. shipping ports.

Old Rails.—The market is quiet and steady. Old D. H.'s are quoted £3. 10/ @ £3. 12/6, c.i.f. New York.

Scrap.—The market is quiet and quotations are unchanged. We quote Heavy Wrought, £3 @ £3. 2/6, c.i.f. New York. Bessemer Crop Ends, run of the mill, are quoted 60/, f.o.b. shipping ports.

Copper.—The market is irregular. We quote Best Selected, £64. 10/ @ £65, and Chili Bars, £57. 10/ @ £58.

Tin—Is a little steadier. Straits, Ingot, spot, are quoted £84. 10/ @ £85. 10/; and futures, £85. 10/ @ £86.

Tin Plates—Are a little weaker. We quote :

| U. S. 44s, 1801, registered..... | 114½ | 114½ |
|----------------------------------|------|------|
| U. S. 44s, 1801, copper..... | 141½ | 117½ |
| U. S. 1807, registered..... | 123½ | 128½ |
| U. S. 1807, coupon..... | 123½ | 123½ |
| U. S. 3 per cents..... | 100 | — |
| U. S. Currency 6s, 1805..... | 128 | — |
| U. S. Currency 6s, 1806..... | 130 | — |
| U. S. Currency 6s, 1807..... | 132 | — |
| U. S. Currency 6s, 1808..... | 134 | — |
| U. S. Currency 6s, 1809..... | 135½ | — |

The posted rates for bankers' sterling remain unchanged at \$4.82½ for 60-day and \$4.85½ for sight. The market is dull. Money on call is 2½ @ 3%.

We quote 60 @ 90 days' indorsed bills receivable 5 @ 5½%; four months' acceptances 5½ @ 6%.

The reduction of the public debt for December is estimated at about \$12,000,000, making the reduction for the year \$110,000,000.

The business changes in New York, taking effect January 1, dissolutions and new partnerships, affect about 100 different firms.

The imports of foreign merchandise at the port during the past week were quite moderate, the total being \$7,413,394, of which \$5,917,494 represents general merchandise and the remainder dry goods.

Since January 1 the imports aggregate \$461,690,544, compared with \$497,771,114 for the corresponding period of 1882.

The imports of specie for the week amount to \$241,427, principally in gold, making a total for the year of \$21,308,008, against \$7,699,428 for the same in 1882, and the exports of specie for the week amount to \$232,345, all in silver, making a total for the year of \$16,112,247, against \$46,500,000 for the same time in 1882.

The exports of domestic produce from this port last week were somewhat below the usual average, the total being \$5,432,515 against \$6,477,550 for the same week last year.

The shipments of all the leading items were rather light. Since January 1 the exports aggregate \$356,362,729, compared with \$348,022,162 for the corresponding period of 1882.

The total importations of dry goods for the year amount to \$121,508,817, which is \$10,753,913 below those for 1882, but \$10,000,000 more than for 1881.

Manufactures of wool alone show an increase among the various items.

The Chief of the Bureau of Statistics, in his fourth monthly statement for the current fiscal year of the imports and exports of the United States, says that the excess of the value of exports over imports of merchandise was as follows:

Month ended November 30, 1883..... \$23,875,753

Five months ended November 30, 1883..... 40,451,384

Eleven months ended November 30, 1883..... 86,584,313

Twelve months ended November 30, 1883..... 120,000,000

The total value of the imports of merchandise for the 12 months ended November 30, 1883, were \$692,495,561, and for the 12 months ended November 30, 1882, \$750,680,760—a decrease of \$58,185,199.

The total value of the exports of merchandise during the 12 months ended November 30, 1883, were \$812,495,651, and during the 12 months ended November 30, 1882, \$752,077,562, an increase of \$60,418,089.

The general markets are phenomenally dull. A number of dry-goods merchants are in the city from the South and West, placing orders for future delivery. Coffee is firmer on a basis of 12½¢, without buyers.

Cotton is extremely dull for

The manufacturers are anticipating a large sale for this article among the express companies, store keepers, mill owners, and others, claiming that at the price for which they are sold (\$2) they will soon pay for themselves. The dimensions of the Handy Truck are as follows: Length of handles, 3 feet 10 inches; width at upper cross-bar, 17 inches; width at lower cross-bar, 13 inches; diameter of wheel, 6 inches.

IRON.

American Pig.—The situation is pronounced satisfactory by the largest sellers in this market. The demand is much better than was generally expected, and orders have been freely placed for deliveries the first six months of this year by large buyers. The prices named for these large transactions are stated to have been \$20 for No. 1, \$19 for No. 2, delivered, which is half a dollar below the usual market rates. It would seem from this that there is no general apprehension of much lower prices. On the other hand, there is nothing to indicate an advance in prices, and we hear of furnaces to be blown out as soon as they use up the stock of material they have on hand, presumably because they cannot make iron profitably at present prices. This is the case even in the Lehigh Valley, where stocks are steadily growing smaller and production is unusually light. Some additional furnaces are to be blown out by Pennsylvania mills at \$37 @ \$37.50, delivered at Boston, and at \$35, delivered at Perth Amboy. One Eastern company reports sales amounting to 38,000 tons on private terms, made last week. It is rumored that the recent sales by Pennsylvania companies at \$35, delivered at Chicago, have caused the net price (\$32 20 at mill) to be named in some home contracts. The era of low prices, however, seems to be over for the present, and those purchasers who secured the bottom figures are fortunate, as the companies which have recently been sharply competing for business have secured all the orders they care to take, some of them having almost the full capacity of their mills engaged for the coming year. The Cambria Iron Company now refuse orders below \$36 at mill, and Messrs. Carnegie Bros. & Co. ask \$36.50. At Eastern mills small lots for quick delivery might be placed at \$34, but for later deliveries \$35 is said to be the lowest rate named. The rail manufacturers now regard themselves masters of the situation, and confidently look forward to higher prices as the season advances.

Old Material.—Business continues very dull. For wrought scrap the inquiry is limited, and prices from yard continue nominally \$23 @ \$24. A sale of foreign old rails has been made at about \$21.50 from store. American old rails are quoted \$22 @ \$22.50, according to views of buyer or seller.

in Heavy Sheets there is a little more movement. We quote, 3¢ @ 3.2¢ for Nos. 10 to 16. Lighter sizes are quoted in our New York Wholesale Price List.

Steel.—Business continues very dull, and there is nothing to indicate an early improvement in the demand. We quote American Tool Steel at 11¢, with a concession to large buyers; Crucible Machinery, 6 1/2¢ @ 7¢; Bessemer and Open-hearth Machinery, 3 1/2¢ @ 4¢; Toe-calk, 3 1/2¢ @ 3 3/4¢; Sleigh-shoe, 2 3/4¢; Boiler Plates, 4 1/2¢ @ 5 1/2¢, with extra for special sizes; English Tool, 15 1/2¢.

Wire Rods.—The demand is still very light, but inquiries are being made, which indicate that buyers will be in the market some time this month. Ordinary Steel Rods are quoted \$46 @ \$48.

Steel Rails.—We hear of numerous transactions having occurred within the past two weeks. Sales have been made by Pennsylvania mills at \$37 @ \$37.50, delivered at Boston, and at \$35, delivered at Perth Amboy. One Eastern company reports sales amounting to 38,000 tons on private terms, made last week. It is rumored that the recent sales by Pennsylvania companies at \$35, delivered at Chicago, have caused the net price (\$32 20 at mill) to be named in some home contracts. The era of low prices, however, seems to be over for the present, and those purchasers who secured the bottom figures are fortunate, as the companies which have recently been sharply competing for business have secured all the orders they care to take, some of them having almost the full capacity of their mills engaged for the coming year. The Cambria Iron Company now refuse orders below \$36 at mill, and Messrs. Carnegie Bros. & Co. ask \$36.50. At Eastern mills small lots for quick delivery might be placed at \$34, but for later deliveries \$35 is said to be the lowest rate named. The rail manufacturers now regard themselves masters of the situation, and confidently look forward to higher prices as the season advances.

Scotch Pig.—There have been sales of small lots for delivery during the next two or three months, but trade generally is very dull. During the week some 1800 tons arrived, which had been principally sold for consumption. Stocks in importers' hands are unusually small. Nominal quotations are as follows: Carnbroe, \$21 from ship and \$22 from store; Coltness, \$22.50 @ \$23 to arrive and from ship; Shotts, \$22.50 @ \$23 from ship; Glengarnock, \$21 from ship and \$22 from store; Gartsherrie, \$22.50 from yard; Langloan, \$23 from ship; Summerlee, \$22.50 to arrive and from ship; Dalmellington, \$20.25 @ \$20.50 to arrive and \$21 from ship; Eglinton, \$20 to arrive.

Bessemer Pig.—Sales of English Hemite have been made at \$20 ex ship, and more is offered at the same rate. American Pig is, however, offered at prices which are fully as satisfactory, which cuts off much of the demand for foreign.

Spielleisen.—Some 20% has been sold at \$28.75, but buyers are now bidding only \$28, while sellers still ask \$28.75. Offers of 30% have been made at \$33 for delivery in January and February.

Bar Iron.—Though business is still quiet, the demand is certainly better than it was last week, and the majority of sellers feel decidedly cheerful over the situation. Much is accomplished in passing the dull season incidental to the close of the year without a sag in prices. Quotations are firmly maintained, and there are not even rumors of cutting in this market. The outlook for local business is bright, as consumers and merchants both have very low stocks, much lower than usual, and many of them have intimated that after they have completed their annual stock-taking, and have time to note the sizes in short supply, they will be obliged to place good-sized orders. There are also contracts pending, to be closed shortly, which will require considerable quantities of iron, that will be purchased here. Reductions in wages are being generally made at the mills, and, though the price of Pig Iron cannot be forced any lower, there is a probability that even at present rates for Bar Iron many mill-owners will be able to secure a little profit, which is an experience to which the Bar Iron trade has for some time been a stranger.

The low prices prevailing for Manufactured Iron and the restricted demand for it are causing our manufacturers to look for business in other than the accustomed channels, and it will not be surprising if determined and successful efforts are made to secure the Cotton-Tie trade, now controlled by English manufacturers of Hoop Iron. We quote local prices for Bar Iron as follows: Best Refined, 1.85¢ @ 2.1¢, at mill, and 2.2¢ @ 2.3¢ from store; Common Iron, 1.7¢ @ 1.75¢ at mill, and 2¢ @ 2.1¢ from store.

Structural and Shaped Iron.—The demand at present is very limited, but the outlook is considered satisfactory, and prices are maintained as follows: Beams, 3.5¢ on wharf for round lots; Angles, 2.4¢ @ 2.6¢ from store; Tees, 3.2¢ @ 3.5¢ from store.

Plate Iron.—Current business is very light, but there are increased inquiries. There is no change to note in prices, which are as follows: Common or Tank, 2.5¢ @ 2.6¢; Refined, 2.75¢; Shell, 3¢ @ 3 1/2¢; Flange, 4¢ @ 4 1/2¢; Extra Flange, 4 1/2¢ @ 5¢.

Sheet Iron.—An order is occasionally received for a bundle of Light Sheets, but

made at figures slightly above ruling "spot" prices. We quote, at the close, large lots, ordinary brands, 3¢ box: Charcoal Bright, \$5.50 @ \$6; do. Ternes, \$5 @ \$5.25; Coke Tin, \$4.85 @ \$5.05, and do. Ternes, \$4.62 1/2 @ \$4.75. Net import of Tin Plates into the United States during the first 10 months of 1883, 188,953 tons, against 179,594 tons during the corresponding period of 1882. Liverpool cables Charcoal, 18 @ 20¢; Coke, 15¢, and very quiet. From London we are told that prices are a little weaker.

Lead.—Holders have advanced their asking rate for both Common and Refined Domestic to \$3.90, and in a small way 3 1/2¢ has actually been paid. St. Louis has been offered \$3.45 for both hard and soft. Any consumers obliged to buy have, for the moment, at least, and perhaps for some time longer, to submit to the demands of the holding interest, but during the week under review nothing has been sold, except the trifling lots allowed to, at 3 1/2¢. London, in our special dispatch to-day, quotes the market firmer. Common English Pig £12 @ £12.5¢. Manufactures are quoted as follows: Lead Pipe, 6 1/2¢; Sheet Lead, 7 1/2¢; Tin-lined Lead Pipe, 15¢ lb, and Block-Tin Pipe, 45¢, less the usual discount to dealers.

Spelter and Zinc.—The listless state of sellers, frequently described by us of late, continues without a ray of an improving tendency, so that, with a light trade doing, all we have to do is to repeat the quotation of 5 1/2¢ for Common Domestic, and 5¢ for 5 1/2¢ Silesian, both closing flat. Our London telegram to-day states that the market is quiet and lower. Ordinary at shipping ports, £15 @ £15.10¢. Net import into the United States first 10 months of last year 323 tons, against 9424 same time 1882. We quote Berthas Refined, 7 1/2¢ @ 8¢, and Sheet Zinc quiet at 5 1/2¢ @ 5 3/4¢.

Antimony.—Has continued moderately active at 10 1/2¢ Hallett, and 11 1/2¢ Cookson.

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Jan. 2, 1884.

Hardware.

Boker, Hermann & Co. Hdw. and Cutlery, pkgs., 58 Downing, Sheldon & Co. Arms, cs., 4 Gun barrels, cs., 3 Dress, Morgan & Co. Nail, cs., 4 Field Alfred & Co. Mds., cs., 19 Godfrey C. J. Arms, case, 1 Hartley & Graham, Guns, case, 1 Judd H. L. & Co. Casks, 3 Knauth, Nachod & Co. Small wrought boilers, 40 Kurschedt Mfg. Co. Mds., cs., 15 Marcks, 18 Cases, 18 Mathews John, Machinery, crate, 1 McKesson & Robbins, Case, 1 Moore's Sons J. P. Arms, cs., 10 Morris & Kendel, Arms, case, 1 Newall U. Mill Co. Mach'y, pkgs., 18 Schoweling, Daly & Gales, Mds., cs., 18 Arms, cs., 9 Scollay J. A. Case, 1 Taylor Thos. Mds., cs., 6 Von Clegg & Co. Ironware, cs., 8 Whittle F. F. Casks, 8 Winchelsea Arms Co. Rifles, cs., 50 Wiedenbeck, Hilger & Co. Hdw. and cutlery, 71 Order: Vises, cask, 1 Anvils, 9 Cutlery, case, 1 Car wheels, 42 Mach'y, box, 1 Chains, cks., 5 Chaine, 10 Iron, Baring Bros. & Co. Rivet rods, coils, 1000 Hammered bars, 1031 Bars, 11,081 Wires rods, coils, 1894 Brown Bros. & Co. Wire, coils, 105 Rivet rods, coils, 1089 Coddington T. B. & Co. Sheets, bds., 329 Crocker Bros. Pig, tons, 200 Spiegel, tons, 85 1/2 Geisenheimer & Co. Specified lot, 1 Lillenberg N. Bars, 248 Lundberg Gust. Rivet rods, bds., 197 Lee Jas. & Co. Pig, tons, 100 Mason John W. Co. Wire rope, coils, 54 Merch. Disp. Co. Wire plates, cks., 4 Taylor & Co. Swedish bds., 78 Swedish bars, 3075 Rods, bds., 11,195 Order: Vises, cask, 1 Anvils, 9 Cutlery, case, 1 Car wheels, 42 Mach'y, box, 1 Chains, cks., 5 Chaine, 10 Iron, Baring Bros. & Co. Rivet rods, coils, 1000 Hammered bars, 1031 Bars, 11,081 Wires rods, coils, 1894 Brown Bros. & Co. Wire, coils, 105 Rivet rods, coils, 1089 Coddington T. B. & Co. Sheets, bds., 329 Crocker Bros. Pig, tons, 200 Spiegel, tons, 85 1/2 Geisenheimer & Co. Specified lot, 1 Lillenberg N. Bars, 248 Lundberg Gust. Rivet rods, bds., 197 Lee Jas. & Co. Pig, tons, 100 Mason John W. Co. Wire rope, coils, 54 Merch. Disp. Co. Wire plates, cks., 4 Taylor & Co. Swedish bds., 78 Swedish bars, 3075 Rods, bds., 11,195

METALS.

Copper.—The new year sets in dull in this market, and active and rising in England. Sales in this city since our last report have not exceeded 150,000 pounds. Lake Superior at 14 1/2¢, ordinary, and 14 3/4¢ @ 14 1/2¢ prime. The rebound in London carried Chile Bars back to \$59, and Best Selected to \$65, a recovery respectively of 30/ and 20%. This occurred since we reported last, and this afternoon we receive the ensuing cablegram: "Market irregular. Best Selected, £64.10/ @ £65, and Chile Bars, £57.10/ @ £58." Manufacturers may be quoted as under: Bottoms, 24¢; Braziers, 24¢; Sheeting, 22¢, and Bolt Copper, 24¢.

Tin.—Our market has been kept in a continual flurry by the fluctuations in London, which came £86 Straits on Monday and had this morning receded to £85. We receive thence this afternoon a cable message to the following effect: "Market a little steadier. Straits Ingots, spot, £84.10/ @ £85.10/ and Futures, £85.10/ @ £86." Messrs. Adamson, Gilliland & Co., London, give per cable simultaneously the following valuable statistical notes: "Stock in London, December 31, 1883: 3500 tons; December deliveries in England and Holland, 1800, of which shipped to America 200; December shipments from the Straits to the United States, 600, to England, 900." Singapore cables £86, cost and freight per steamer, to New York. Shipments from the Straits Settlements to the United States during the first 10 months of last year were 5833 tons, according to Messrs. Gilliland, Wood & Co.'s tables, against 5692 tons in 1882; 4452 tons in 1881; 725 tons in 1880; 5521 in 1879, and 3048 in 1878. Net import into the United States first 10 months 1883, 10,562 tons, against 8162 same time 1882. We quote Straits Tin, large lines, today, 10¢ in this market, an advance of 3¢ from the lowest point last month. Tin Plates have been very quiet, with a shade less favorably quoted than the previous week, but some sales "to arrive" have been

made at figures slightly above ruling "spot" prices. We quote, at the close, large lots, ordinary brands, 3¢ box: Charcoal Bright, \$5.50 @ \$6; do. Ternes, \$5 @ \$5.25; Coke Tin, \$4.85 @ \$5.05, and do. Ternes, \$4.62 1/2 @ \$4.75.

Net import of Tin Plates into the United States during the first 10 months of last year 323 tons, against 9424 same time 1882. We quote Berthas Refined, 7 1/2¢ @ 8¢, and Sheet Zinc quiet at 5 1/2¢ @ 5 3/4¢.

Antimony—Has continued moderately active at 10 1/2¢ Hallett, and 11 1/2¢ Cookson.

EXPORTS

of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the week ending January 1, 1884.

Bremen.

Quan. Val. Ptim., gds., 78,750 \$64,050 Hdw., pkgs., 6 215 Hdw., pkgs., 4 160 Cutlery, case, 1 17 Amat-rodam Mach'y, pkgs., 3 240 Tacks, bxs., 11 294 Clocks, pkgs., 24 606 Hdw., cs., 85 946 Rot ordam. Ptim., gds., 276,275 29,500 Hamburg. Hdw., pkgs., 29 622 Mach'y, pkgs., 1 105 Revolvers, cs., 20 281 Carbines, cs., 21 314 Clocks, pkgs., 24 606 Hdw., cs., 19 636 Scales, cs., 21 314 Revolvers, cs., 20 281 Carbines, cs., 21 314 Clocks, pkgs., 24 606 Hdw., cs., 19 636 Butts., 157 57

London.

Saws, case, 1 52 Nails, cs., 5 51 Guns, cs., 7 445 Firearms, cs., 25 450 Sew. mach., cs., 21 500 Copper, pkgs., 226 6,028 Carbines, cs., 21 314 W. mills, cs., 16 1,082 Clocks, pkgs., 1 14

Quan. Val. Mf. iron, pkgs., 1 82 Ag. imp., pkgs., 6 19 M. dials, 50 50 Hdws., pkgs., 230 6,617 Axes, cs., 4 100 Springs, case, 1 100

Cartridges, cs., 20 546 Eng. sup'a's, cs., 1 479

Pumps, pkgs., 6 118

Clocks, pkgs., 32 9,651

Sew. ma., cs., 243 6,741

Rifle stocks, cs., 6 450

Pumps, pkgs., 6 118

Clocks, bxs., 20 226

Ptim., gds., 178,524 15,622

Newcastle.

Ag. imp., pkgs., 2 36

M. xico.

Clocks, bxs., 20 226

Ptim., gds., 181,325 11,590

Plymouth.

Ptim., gds., 91,168 7,989

Leith.

Ag. imp., pkgs., 10 220

Bristol.

Clocks, pkgs., 15 281

Gibraltar.

Ptim., gds., 340,000 85,550

British East Indies

Ptim., gds., 450,400 47,744

British West Indies

Ptim., gds., 17,524 15,622

Canada.

Cards, bxs., 90 153

Nova Scotia

Nails, pkgs., 18 121

British Guiana

Hdw., cs., 40 712

Trucks, pkgs., 12 80

Scales, cs., 20 200

Marseilles.

Cop. material, pkgs., 596 3,000

books of representative companies. The Thomas Iron Company's extreme figures for Philadelphia deliveries of No. 1 Foundry Iron were \$24 and \$20, their sales in January being at \$24, and from that steadily down to \$20 in June, recovering during July to \$21, and so continuing until the close of the year, although of late with a weakening tendency, and a probability of \$20 being the opening quotation in 1884. The representative companies in Mill Irons are the Glendon and Andover. These companies made only one change during the entire year, commencing with \$21 at furnace in January, and so continuing until the 1st of May, when their price was reduced to \$19, and so remains to this date, *firm*. The extreme decline may therefore be placed at \$3 per ton in Foundry Irons and \$2 in Mill Irons. Cornwall Irons (Red Short), which are now being extensively used, have held their prices without variation since June, viz., \$17 $\frac{1}{2}$ ton for No. 3, free on cars at furnace, at which they are still firmly held.

Mr. James M. Swank, secretary of the Iron and Steel Association, states as follows: "We are able to estimate very closely the production of Pig Iron in 1883. On the 1st of July we ascertained definitely that the production for the first six months of the year was 2,352,019 gross tons, or just 40,357 tons more than the one-half of the production of 1882. This rate of production was not, however, maintained during the latter half of the year, although it was not greatly reduced, as we ascertained definitely on the 1st of November that the number of furnaces then in blast was only three less than on the 1st of July. We think it to be a safe supposition that the production of 1883 was equal to that of 1882, but that it did not exceed it. The production of 1882 was 4,623,323 gross tons. We are also able to estimate closely the consumption of Pig Iron in 1883. We commenced the year with 383,055 gross tons of Domestic Pig Iron unsold. This quantity was increased to 528,500 tons on the 1st of July, but by the 1st of November there had been a decrease to 432,354 tons. At the close of the year it is exceedingly probable that stocks had been reduced to the figures which prevailed at the close of 1882, namely, 383,655 tons. We imported during 1883 about 325,000 tons, all of which may be said to have gone directly into consumption. Adding the estimated production, 4,623,323 gross tons, to the estimated importation, 325,000 tons, and taking no account of the balance of stocks at the beginning and end of the year, we have 4,848,323 tons as the approximate consumption of the year. By similar methods, but dealing in all cases with ascertained facts, we estimated in our last annual report that the consumption of Pig Iron in 1882 was 4,963,278 gross tons."

Manufactured Iron.—The year just closed has been unsatisfactory to the general trade, but especially so to manufacturers of Bar Iron. Prices have shown a declining tendency from the beginning to the end of the year, closing at the lowest point reached since February, 1879, and lower than the average of any one year in the entire history of the trade. About five years ago prices stood for a few weeks at \$40.32 $\frac{1}{2}$ ton, but the lowest average for any one year since 1844 was \$44.24 $\frac{1}{2}$ ton, while to-day's average would not exceed \$43.60. This branch of the Iron trade probably feels the depression more severely than any other, and at the moment the outlook is not by any means encouraging. Cost of production has been cut down to the lowest point possible, and although there is very close competition for business, it is hardly possible for prices to show much of any further decline. There is a good deal of cheap Iron on the market, however, sales having been made as low as \$38 $\frac{1}{2}$ ton, but it cannot be classed as Refined Iron, although it is sometimes passed as such. The Plate Iron trade has been in comparatively good condition, although prices show a gradual shrinkage, averaging, probably, \$6.72 $\frac{1}{2}$ ton, against \$12 @ \$13 in Bar Iron. Moreover, the Plate Mills have been kept pretty steadily at work, so that in spite of declining prices manufacturers have had at least a fair average year's business. The demand for Tank Iron has been much lighter than during 1882 and some previous years, but ship and bridge builders have been steady buyers, so that there has been no suspension of work or shortening of time unless under exceptional circumstances. Competition has been very sharp, however, and prices have slipped away by twentieths and tenths, averaging for the year, as we have said, about 6.72 $\frac{1}{2}$ ton. The outlook seems to promise a good demand during 1884, although the weakness in prices has not been exhausted, judging by the anxiety of manufacturers to secure new business. Nominally 2.25¢ is quoted for Ordinary Plates, but on large orders there is no doubt that concessions would be granted. Shaped Iron has been remarkably steady, and while there has been some curtailment in the output, there is no reasonable ground for complaints, the average results of the year's business having been fairly satisfactory. Prospects for the coming year are somewhat favorable, several large concerns report a much larger amount of work on hand than they had at equal date in 1882, while inquiries for quotations on large lots are quite numerous. This refers chiefly to the large sizes, the capacity for manufacturing small shapes being in excess of the demand; hence sharper competition.

Steel Rails.—There is not much of interest to notice in this department of the Iron trade, as prices have been weak and declining throughout the entire year. Prices opened in January at \$38.50, and with but slight variations, sold at about that price until August, when sales were made at from \$36 to \$37. During the last four months of the year the market developed further weakness, sales having been made at from \$32.50 to \$35, with indications at the close of a slight reaction from the lowest quotation, with sales in December of over 100,000 tons at an average of \$33.50. Prospects for the coming year are not particularly bright, however, although it is probable that prices have touched bottom for the present, and that as spring approaches \$35 may again become a very inside figure. The demand for Scotch Pig.—There is no demand for Foreign Iron. Market dull and prices firm at \$25.50 for Summerlee and \$28 for Glen-garnock.

Merchant Steel.—There seems to be a better feeling in the Merchant Steel market. At this season of the year this is somewhat

the 14 Bessemer companies have their mills in operation, and each have an average of about four months' work on hand, deliveries extending somewhat beyond that. In other words, in nine mills there is two-thirds capacity engaged for six months on work at low prices; hence the anxiety to fill up the balance as soon as it can be done at about \$35. A few good orders remain to be given out yet, and it is expected that they will be placed in the course of the next two or three weeks, besides which there is always a demand for small lots, which will help to fill up a good many bare spots. Mr. Swank says:

"The production of Steel Rails in 1883 has therefore been probably 100,000 tons less than in 1882. The total Rail tonnage of 1882 was 1,507,851 gross tons, of which 203,459 tons were Iron Rails and 1,304,392 tons were Steel Rails. The total Rail production of 1883 was probably 1,300,000 gross tons, of which about 1,200,000 tons were Steel Rails and 100,000 tons were Iron Rails. Our imports of rails in 1883, mainly of Steel, aggregated about 100,000 gross tons, against 200,000 tons in 1882. In round numbers our consumption of Rails in 1883 was 300,000 tons less than in 1882."

Changes have been made in firms connected with the Iron interests as follows:

Blakey & Walbaum dissolved in consequence of the death of Mr. Thos. Blakey. W. H. Walbaum continues the business under the style of W. A. Walbaum & Co.

Chas. K. Lippincott withdraws from the firm of E. Samuel & Co., and with George Heberton (late of Heberton & Co.) forms a new firm under the name of Chas. K. Lip-pincott & Co.

S. F. Sharpless (late of Heberton & Co.) continues business under the name of S. F. Sharpless & Co.

Esherrick & Kelton have formed a partnership under that firm name.

Bartold Bernheim, for many years connected with the firm of Naylor & Co., Philadelphia, New York and Boston, and Naylor, Benson & Co., of London, becomes a partner in the firm of Merchant & Co., tin plates, &c., Philadelphia and New York.

In the Hardware trade the following changes have been made.

Alfred C. Rex & Co. succeed Keyser & Rex as manufacturers of Hardware Specialties.

Lloyd & Supplee Hardware Company succeed Lloyd, Supplee & Walton.

H. & G. E. Knight, with John C. Brenner as special partner, succeed to the business of John G. Brenner, Son & Co.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark St., Cor. Lake St., Chicago, Dec. 31, 1883.

Hardware.—The Hardware trade has lapsed into quietness, and business in the way of sales is almost suspended. Jobbers are busily engaged in taking stock and closing up the transactions of 1883. While there is not much to encourage the merchant in the opening of trade for 1884, there is nothing to discourage or make him feel that anything but a prosperous season will result from his efforts. All are hopeful that they will be favored with better prices and profits than they have realized during the greater part of the closing year. Numerous novelties are already making their appearance, and it is likely that before the spring trade fairly begins the market will be flooded with new devices and improvements of every description. Manufacturers are actively looking after the best and most prominent jobbers and consumers to dispose of their goods, and competition for place will be of vast importance in the final settlement of the question of distribution.

Nails.—The Nail trade is not looking bright this week. Orders have been on the wane, but that feature has not affected prices. The market is firm at our last quotations—\$2.50 @ \$2.60, according to quantity, with little or no disposition to "bear" the value. The lack of orders is attributable to the season, and the firmness in price to light stocks and the suspension of manufacture. Sales have been in small quantities only, and the business may be summed up as being dull and quiet.

American Pig Iron.—This is the only branch of the Iron trade that bears any signs of buoyancy. In the way of transactions there is very little doing, but the incessant maneuvering and shopping give an external appearance of an active market, and has the effect of holding prices firm and making buyers uneasy. As before noted, there being no stocks in sight, sellers anticipate higher figures and are perfectly indifferent whether they sell or not. The fact is, that unless they do get their prices they won't sell, and, this being very different position from any that the seller has enjoyed for many a year, the consumer is at a loss to know which is best to do—buy or wait. Bids are made on 1000 to 5000 ton lots for monthly deliveries in 1884, at prices ranging from 50¢ below to \$1 $\frac{1}{2}$ ton above our quotations, according to class. For present or early delivery present prices are taken, but for large orders running through the entire year the highest bids have as yet failed to induce furnacemen to accept. The foregoing relates more particularly to Charcoal Irons. In Southern and Soft Irons, orders are more easily placed. There is less demand for all-year delivery, but for present and near future the market price is firmly sustained. For carload lots we quote as follows, 4 months: Lake Superior Charcoal, Nos. 1, 2 and 3, at \$22.50 @ \$23; Nos. 4, 5 and 6 at \$24; Lake Superior Coke at \$21 @ \$22; Lake Superior and Ohio, mixed, at \$21; Ohio Standard Black Band, No. 1, \$22 @ \$23; Southern, No. 1, at \$20.50, and No. 2 at \$19.50; Silvery Soft at \$19.50 @ \$21; Anthracite, No. 1, at \$22, and No. 2 at \$21.

Scotch Pig.—There is no demand for Foreign Iron. Market dull and prices firm at \$25.50 for Summerlee and \$28 for Glen-garnock.

Merchant Steel.—There seems to be a better feeling in the Merchant Steel market. At this season of the year this is somewhat

unusual. Trade does not often begin before the middle of January, but dullness in the fall and early winter necessarily leaves consumers with a light stock, and as the prospective demand for machinery and tools is brighter than was anticipated, manufacturers are buying earlier to meet their necessities for implements for the spring trade. The demand during the past week makes a more than fair aggregate, compared with the last three months of the year. There is no prospect of a "boom," but any improvement over the past monotonous quiet receives an earnest welcome from both dealer and manufacturer, no matter how small the change. We quote as follows for best refined grades:

| | Per pound. |
|--------------------------------|------------|
| Best Refined Cast Tool Steel. | 10 @ 10¢ |
| Crucible Cast Machinery Steel. | 14 @ 14¢ |
| Bessemer Machinery Steel. | 14 @ 14¢ |
| Open-Hearth Spring Steel. | 14 @ 14¢ |
| Loc-Calk Steel. | 14 @ 14¢ |
| Sled-Shoe Steel, flat. | 14 @ 14¢ |
| Sled-Shoe Steel, curved. | 14 @ 14¢ |
| Bessemer Steel. | 14 @ 14¢ |
| Cast Flow Steel. | 5 @ 5¢ |
| German Flow Steel. | 14 @ 14¢ |
| Syndicate Steel. | 9 @ 9¢ |
| Fire-Box and Boiler Steel. | 14 @ 14¢ |

Steel Rails.—The week just closed has been one of less activity in the Rail market than any other week during the month. Railroads in this section who had positive demands have placed their orders for such quantities, with perhaps a few exceptions, at about \$35, which have pretty well filled the mills for at least six months. Mills having thus secured working material as long in advance as they care to, and partly withdrawn from the market, they are looking for higher prices before seeking to book further contracts. Their attitude has strengthened the market, and prices now range from \$35 to \$37, according to time of delivery and tonnage. The North Chicago Rolling Mill Company are making preparations to start up the Chicago branch of their works, which indicates that they have secured a large portion of the Western trade, which is heavier than was generally anticipated.

Old Rails.—There is not much doing in the Old-Rail market. For the meager quantities that are offering we quote \$21 @ \$22, Chicago or Milwaukee delivery. We hear of several large lots in hands of Scrap dealers, which are held for an advance of several dollars $\frac{1}{2}$ ton.

Bar Iron.—The holidays are held responsible for a quiet week in the Bar-Iron trade. Not that it has been more quiet than in corresponding seasons, but that trade was not nearly so brisk as in the first part of the month. Orders for delivery in January and February are more numerous in the aggregate tonnage than for current shipment. Such is particularly the case in Irons for railroads and other large corporations. We continue to quote \$2 @ \$2.10 for Best Refined, with the usual concessions to large dealers.

Norway Bars.—Market quiet and steady at 4¢ rates. It is said that this price has been shaded, but the report has not been verified.

Builders' Iron.—There is nothing doing in Builders' Iron. We continue to quote Tank, 2.7¢; Angles, 2.9¢; Beams, 3.6¢; Channels, 3.6¢ @ 3.8¢.

Galvanized Iron.—The improvement noted last week has been carried through the one closing to-day. In this, as in the Steel market, it did not require much of a change to be an important feature. The market has been in such a very disordered condition for so long a time that a little improvement is quite an extraordinary event. For Juniata we quote 50% off, and 45 and 50% off for Refined.

Black Sheets.—The demand for Black Sheets is remarkably light. Prices are only nominal, as follows: No. 24 at \$3.40, Nos. 25 and 26 at \$3.50, and No. 27 at \$3.60.

Scrap Iron.—There is nothing of importance in the Scrap market. Furnaces are not using much, and take what they need at \$18.50 @ \$19.50, Chicago or Milwaukee delivery. The following are quoted as dealers' purchasing prices: No. 1 Wrought Scrap, $\frac{1}{2}$ net ton, \$17 @ \$18; Cast Scrap, $\frac{1}{2}$ net ton, \$14; No. 1 Stove Plate Scrap, $\frac{1}{2}$ net ton, \$18; Wrought Turnings, $\frac{1}{2}$ ton, \$8; Cast-Iron Borings, \$7; Old Flow Steel, \$11; Tool Steel, $\frac{1}{2}$ net ton, \$20; Malleable Scrap, \$5.

EVERETT & POST, 156 Lake street, Chicago, report to us as follows, under date of December 28, 1883: **Pig Lead.**—The Chicago Lead market has been quiet; prices have improved over last week, and sales have been made of Common at \$3.40 and Refined at \$3.45. The producers, as a rule, are only selling in a small way, anticipating better prices after turn of the year.

CHATTANOOGA.

Office of *The Iron Age*, Eighth St., CHATTANOOGA, Dec. 31, 1883.

The weather during the week has been quite clear during daylight, with cool, frosty nights. The South was covered by a rain-storm the first of the week, which closed dry and with May temperature. Small trade during the holidays has created the usual bustle and noise, while dullness has prevailed in all heavy lines, and building operations have been nearly suspended. There is pretty general uneasiness among manufacturers in the South, concerning possible action of the Lower House of Congress touching the tariff. The leading papers of the section forcibly and constantly oppose all radical measures on the subject. The weak country dealers seem to have been pretty effectually squeezed out by the dull trade and drooping prices of the fall. What are left will apparently pull through the winter. The warm weather still seriously reduces trade, and slow business is probably to be the rule during the balance of the season.

Pig Iron.—Sales are few and in small numbers. Neither producers nor consumers show any disposition to make transactions of any size. The farmers expect slightly better prices early in the new year. The customers hope for a further decline. We continue quotations, which would have to be scaled down to put it lower, and we hear wondrous stories of figures current there. A high river has brought an ample supply of coal at our wharf. Pittsburgh lump is said to be selling at 7¢ $\frac{1}{2}$ bushel at the barge. This is as low as we have ever known it here. Kentucky coal is correspondingly cheaper. The discovery of a large gas well near Ashland may prove important to manufacturers thereabout.

Gray Forge, \$16 @ \$19; White and Mottled, \$14 @ \$15; Car-wheel Metal, \$24 @ \$26.

Ores.—We quote 50% Brown Hematite, $\frac{1}{2}$ ton, \$2 @ \$2.75; Red Fossil, \$2 @ \$2.25, delivered at furnace.

Miscellaneous Articles.—Old Rails are in light supply and demand is not urgent. We quote them at \$22. Scraps are not called for, except select lots of Wrought. We quote Wrought Scrap, \$18 @ \$22; Cast Scrap, \$11 @ \$14; Old Wheels, nominal, \$22.

Nails.—Trade is rather dull, with quotations at \$2.40 as an outside figure for carloads, 2¢ off for cash; job lots, 10¢ @ 15¢ higher.

Merchant Iron.—Bar is dull at \$1.90 @ \$1.95 for round bars, assized sizes. There is not much Northern Bar being offered at river points. Bolts, \$3 @ \$3.20; Spikes, \$2.35; Splices, \$2.

Coal.—We quote Fancy Lump, \$3; Common, \$2.50; run of mine to manufacturers, \$1.50 at mills.

Coke.—The Dade Coal and Coke Works management have reduced the price of their Coke from \$2.62 $\frac{1}{2}$ to \$2.12 $\frac{1}{2}$ $\frac{1}{2}$ ton, delivered at furnace. Other works have cut down 20%, making the outside figure for best brands \$2.40. Foundry Coke sells at 8¢ @ 10¢ $\frac{1}{2}$ bushel.

ST. LOUIS.

HOPPER & CO., Pig Iron and Iron Ore Merchants, 214 Pine street, report to us as follows, under date of Dec. 29, 1883: We have no changes to note, either in price or condition of the market. We quote :

HOT BLAST CHARCOAL IRONS.

| | |
|-----------|---------------|
| Missouri. | 19.50 @ 20.50 |
| Southern. | 20.00 @ 20.00 |
| Ohio. | 24.00 @ 26.00 |

COAL AND COKE IRONS.

| | |
| --- | --- |
| Missouri. | 19.50 @ 20.50 |

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the low selling values of the time being. This is particularly the case in respect of steel rails, for which there are said to be numerous inquiries. With the rail mills fully engaged there would be less need for billets, &c., to be pushed, and iron would be relieved to that extent from a competition which would otherwise be of a serious nature. As a whole, the outlook cannot be said to be other than poor, although there are circumstances which will probably prevent the utter collapse predicted in some quarters. At Glasgow there has been a moderate business in warrants, but values have not undergone any material alteration, the closing quotation on Friday being at 44/- per ton. Makers' brands have been somewhat irregular, but most of them have been a shade easier than a week ago. As is usually the case toward the end of the year, there is a good deal of surmise and speculative discussion as to the probable statistical position of the Scotch iron trade at Christmas. There seems to be a general impression that stocks will show a reduction of from 30,000 to 60,000 tons, bearing in mind the steady decrease of late in Connal's holdings and the good demand for leading makers' brands. Until next week, however, any forecast must be quite problematical, and would then be almost useless, seeing that the official returns will be issued a few days after Christmas Day. In the North of England the situation is still gloomy, and values are depressed, No. 3 being on sale at 36/9 @ 37/, with lowest for futures. Transactions are not numerous, and bid fair to be yet further minimized, unless an improvement should take place in the manufactured-iron trade of the district. In hematite pig iron there is virtually no movement in either direction, mixed lots on the West Coast being held at 46@46/- per ton in usual proportions. The contracts for next year as yet entered into relate to small lots only, as the smelters are reluctant to sell far forward under existing circumstances and at current quotations. Unless the demand for rails should speedily expand, the output of these pigs must undergo a marked restriction. In the other chief smelting districts prices are nominal and uneven, with only a limited amount of new business doing. There are sundry inquiries as to January-March deliveries, but there is no eagerness on either side to conclude contracts for large lots.

Of the heavy manufactured iron departments, those producing armor plates are best employed, but there is a good output of boiler plates, and some of the larger ship-plate mills are as yet tolerably active. In ordinary finished iron there is a moderate business only, with no noticeable variation in prices. Staffordshire marked bars are nominal at £7. 10/-, but that price scarcely represents the figure at which the iron is changing hands. Medium bars are £6. 15/- @ £7; ordinary, £6 @ £6. 10/-, and common Welsh for India, £6. 6/3 @ £5. 7/6. Sheets and strips are in fair request, but values are irregular. In galvanized iron there is a moderate turnover, but there is reason for fearing that consignments are being too freely dispatched to the Australian Colonies. Fencing wire is dull. Swedish hammered bars are selling for India, Singapore, &c., at about £9. 10/- @ £10 per ton, c.i.f. London. Belgian bars are called £5. 5/-, less 2%, f.o.b. Antwerp, and Belgian nail rods £5. 17/6, same port and terms. In iron rails we hear of no new business. Old rails are called about £3. 5/- per ton for D. H., f.o.b. London, or £3. 3/- Liverpool. Heavy wrought scrap is flat at £2. 13/- @ £2. 14/-, f.o.b. London. Old boiler plates run at £3. 10/- @ £3. 12/6, old wire rope £4 @ £4. 2/6, and old horsehair (packed) at £5 @ £5. 2/6 per ton, all f.o.b. London. Freights are easy, and, for the most part, as of late. Pig iron by ordinary steamer—Glasgow to New York—is 4/- @ 4/- per ton. Coastwise sailing freights from the Clyde for pig iron vary according to ports, Liverpool being 4/-; London, 7/-; Belfast, 4/-; Boston, 7/-; Bristol, 5/6; Cardiff, 5/-; Dublin, 5/6; Falmouth, 8/-; Gloucester, 7/-; Ipswich, 8/-; Limerick, 9/-; Londonderry, 5/6; Newcastle, 6/-; Plymouth, 7/-; and Portsmouth, 8/. United States and Eastern rates are unchanged at my late figures. Steel is again without alterations to note, a fair amount of business only being the characteristic of all the branches of the trade. Steel rails remain dull and nominal at £4. 5/- and upward per ton for ordinary heavy sections. Several inquiries are being made by the Indian and other lines, which may lead to sales. Wages reductions are likely to be enforced throughout this branch with the incoming of 1884. Bolkow-Vaughans are already having trouble with their men on this account, as mentioned elsewhere in this communication.

SCOTCH PIG IRON

is extremely dull at the time of this writing, with a record for the past week which is poor and monotonous. As is usual at this season, speculative movements are on a limited scale; hence the previous depression may be said to have been considerably accentuated. For another fortnight or so there will be only small turnover pending the issue of the annual statistics, which are expected to show total stocks reaching 800,000 to 810,000 tons, or less than last year. At the present time there are 102 furnaces in blast in Scotland (including nine on hematites), as against 112 a year ago. Connal's stocks diminished by 311 tons last week, making the total 583,147 tons, compared with 610,497 tons a year ago. Shipments to date have been 605,629 tons, or 315 tons more than in 1882, while Middlesbrough's importations into Scotland have been 262,078 tons, or an increase of 35,585 tons to date. Writing from Glasgow on December 15, James Watson & Co. said: "The Scotch iron market has again drifted into a very lifeless state, and the business being transacted, both speculatively and legitimately, is of a limited nature, no doubt due to some extent to the close of the year. The warrant market last Monday fluctuated between 44 1/2 and 44 1/4, and on the following day it was steady between 44 1/2 and 44 3/4, cash. On Wednesday it was flat and the price declined from 44 3/4 to 44 1/2 per ton. Yesterday a small business was done between 44 1/3 and 44 1/2 per ton, while to-day it has been weaker, with transactions between 44 1/2 and 44 1/4, closing with sellers at the latter figure. The shipments last week were 8274 tons, as compared with

7145 tons for the corresponding week of last year." We quote:

| No. 1. | No. 2. | No. 3. |
|---------------------------|--------|--------|
| G. M. B., at Glasgow. | 45/6 | 43/6 |
| Clyde, | 48/ | 46/ |
| Coltness, | 56/ | 51/ |
| Langloan, | 55/ | 50/6 |
| Gartsherrie, | 52/ | 49/6 |
| Summerlee, | 53/6 | 49/6 |
| Calder, | 54/6 | 47/6 |
| Warrington, | 52/6 | 45/ |
| Glengarock, at Ardrossan. | 52/6 | 43/6 |
| Eglington, | 46/6 | 43/6 |
| Dalmellington, | 48/ | 46/6 |
| Shotts, at Leith. | 59/ | 52/ |
| Kinnel, at Bo'ness. | 46/6 | 45/6 |
| Carron, at Grangemouth. | 48/6 | 47/6 |

MIDDLESBORO' PIG IRON

is hopelessly inanimate, and its value seems to be still 10% on the down line," No. 3 being offered at 36/9 @ 37/, with lowest for futures. Transactions are not numerous, and bid fair to be yet further minimized, unless an improvement should take place in the manufactured-iron trade of the district. In hematite pig iron there is virtually no movement in either direction, mixed lots on the West Coast being held at 46@46/- per ton in usual proportions. The contracts for next year as yet entered into relate to small lots only, as the smelters are reluctant to sell far forward under existing circumstances and at current quotations. Unless the demand for rails should speedily expand, the output of these pigs must undergo a marked restriction. In the other chief smelting districts prices are nominal and uneven, with only a limited amount of new business doing. There are sundry inquiries as to January-March deliveries, but there is no eagerness on either side to conclude contracts for large lots.

HEMATITE PIG IRONS

continues weak, although the make is being somewhat restricted, there being now 54 blast furnaces on hematites on the West Coast, and 2 on spiegel, out of 81 built. For mixed lots 45/6 @ 46/6 is quoted, but sales are not large. There are 42,000 tons in the West Cumberland stores, besides smelters' own stocks. West Coast brands are:

| No. 1. | No. 2. | No. 3. |
|-------------|--------|--------|
| Cleator. | 48/6 | 48/ |
| Lonsdale. | 48/ | 47/6 |
| Workington. | 48/ | 47/6 |
| Lowther. | 48/ | 47/6 |
| Distington. | 48/ | 47/6 |
| Harrington. | 48/6 | 47/6 |
| Solway. | 48/ | 47/6 |
| Maryport. | 48/ | 47/6 |

North of England hematites, &c., pigs are, f.o.b., Cumberland ports, &c.:.

| No. or quality. | Ordinary. | Bessemer. |
|-----------------|-----------|-----------|
| 1. | 49/ | 49/ |
| 2. | 51/ | 48/ |
| 3. | 50/ | 47/ |
| 4. Foundry. | 49/ | 47/ |
| 4. Forge. | 49/ | 47/ |
| Mottled. | 49/ | 47/ |
| White. | 49/ | 47/ |

AMERICAN PIG IRON IN ENGLAND.

The appended paragraph is taken from the *Ironmonger* of December 15: "Thomas Perry & Son, Bilstion, completed on Saturday one of the finest chilled rolls that it is believed was ever made. The cast weight of the roll was 14 tons, its extreme length 18 feet, the length of its working part or body 12 feet 10 inches and its diameter 28 inches. The chill upon its surface is 3/4 inch deep, yet a hole 4 inches in diameter has been bored in the center throughout the whole 18 feet. The American iron, which is said to have cost £10 a ton, was used as a mixture with English cold-blast iron at half the price. For a chill roll of such great length the demand has been hitherto so exceptional that the makers at first refused to accept the order, which was rejected as by other British, as well as Continental and American, engineers. To execute it Messrs. Perry had to erect special machinery at an outlay of £1000. The roll has been made to the order of a Kirkcaldy firm of linoleum floor-cloth manufacturers."

Messrs. Perry make a special "line" of chilled rolls, and have a high reputation for their products generally. It may be taken for granted, therefore, that they know their business, and that if they imported American pig iron for mixing purposes it was because they found nothing else would do. That being the case, I think it would be useful, as well as interesting, to learn what American brand was used and in what proportions—indeed, I think the interests of the trade on both sides of the Atlantic require the publication of the information.

TIN PLATES

are again rather weak, but the lower rates mentioned in some of the current reports may be taken to apply to the newer and less reputed brands of cokes. The bears have got hold again at Liverpool, and by selling somewhat freely at 15 1/2 have hammered down values to 15/6, thereby providing cover for their own operations. Good brands of ordinary I. C. cokes fetch 15 9/ @ 16, a few bringing as much as 16 3/ @ 16 6/ per box. Coke wasters are easier at 15/3, at which large quantities still change hands. There are said to be large orders in reserve for charcoals, buyers offering 18/ for assorted ordinary sizes, and 18 6/ @ 19/ I. C. for squares, and 1 1/6 for best charcoal. Charcoal ternes are quiet at about 16/ and best coke tins at 17 1/6 per box. The weakness of tin and the other metals is materially assisting the operations of the bears in this market.

THE BOARD OF TRADE RETURNS

for the month of November, just issued, show that the total value of the imports during that month was £26,526,437, against £34,901,910 in November, 1882, and £34,269,784 in November, 1881. In the 11 months ending November 30 the figures were £30,165,801 this year, and £37,643,902 last year. The total value of last month's exports was £20,054,698, as against £20,202,948 same month last year and £20,713,164 in November, 1881. For the 11 months the totals were, in 1883, £220,858,642; in 1882, £223,305,605, and in 1881, £213,773,957. The aggregate quantity of iron and steel of all kinds exported last month was 342,051 tons, valued at £2,313,674, as compared with 334,015 tons and £2,559,025 in November, 1882, and 309,436 tons, worth £2,266,306 in November, 1881. In the 11 months this year we have exported 3,765,192 tons, for £26,517,163, against 4,062,215 tons and £29,301,039 last year, and 3,518,511 tons for £25,166,664 in the same part of 1881.

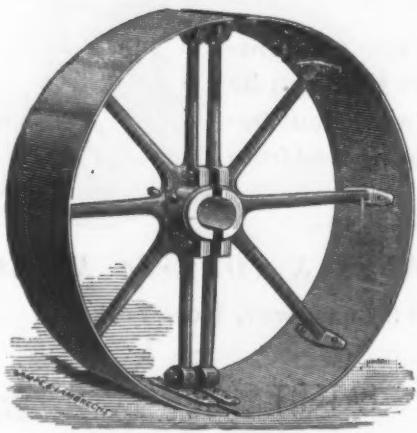
The leading items of our exports last month included the following:

| Articles. | Quantities. | | Values. | |
|--|-------------|-----------|-----------|---------|
| | 1882. | 1883. | 1882. | 1883. |
| Firearms, small, No. 1. | 20,744 | 21,140 | £30,247 | £29,934 |
| Brass, manufactures | 10,779 | 7,466 | 46,980 | 32,812 |
| not being ordnance, cwt.s. | | | | |
| Carriages | | | | |
| Railway carriages for passengers, &c. | | | 24,510 | 22,057 |
| Passenger, goods, wagons, &c., tons. | | | | 6,1047 |
| Coal, &c., tons. | 1,582,098 | 2,037,240 | 731,188 | 98,389 |
| Copper, unwt., cwt.s. | 21,087 | 20,821 | 77,613 | 98,741 |
| Copper, wt., cwt.s. | 21,018 | 28,291 | 91,214 | 107,714 |
| Metals or alloys, metal sheathing, cwt.s. | | | | |
| Bdw. and cutlery, iron and steel. | 3'710 | 34,974 | 1,2458 | 104,448 |
| Pig iron, tons. | 120,713 | 139,000 | 26,782 | 28,163 |
| Bar angle, &c., tons. | 20,685 | 23,453 | 214,213 | 174,951 |
| Railroad, tons. | 65,238 | 77,004 | 449,985 | 494,023 |
| Wire (except telegraph wire), tons. | | 7,600 | 4,69 | 117,210 |
| Hoops, sheet and boiler and armor plates, tons. | 31,043 | 32,481 | 1,252,472 | 334,923 |
| Tin plates, tons. | 21,407 | 22,491 | 3'6,809 | 354,444 |
| Cast or wrought, tons. | 26,458 | 32,722 | 415,481 | 350,370 |
| Other iron, tons. | | | | |
| Brass, for ornaments, picture frames, &c., tons. | 9,607 | 9,914 | 40,450 | 19,400 |
| Steel, unwrought, tons. | 7,776 | 5,211 | 131,815 | 100,406 |
| Manufacture of steel and iron, tons. | 1,878 | 827 | 92,648 | 37,551 |
| Lead, tons. | 3,208 | 2,947 | 40,509 | 37,570 |
| Machinery and mill-work. | | | | |
| Steam engines. | | | 341,005 | 150,280 |
| Other machinery, &c. | | | 762,109 | 813,040 |
| Plates and plating and gilt wares. | | | 31,779 | 31,570 |
| Rel. wire and apparatus connected therewith. | | | 15,691 | 70,667 |
| Tin (unwt.), cwt.s. | 31,095 | 8,291 | 57,046 | 39,503 |

Among the imports were:

| Articles. | Quantities. | | Values. | |
|----------------------------------|-------------|---------|---------|---------|
| | 1882. | 1883. | 1882. | 1883. |
| Copper ore, tons. | 4,734 | 6,412 | £23,017 | £10,902 |
| Resin, tons. | 4,051 | 6,153 | 155,862 | 121,76 |
| Unwrought or part wrought, tons. | 2,48 | 2,873 | 174,593 | 17,147 |
| Iron ore, tons. | 28,068 | 193,420 | 193,420 | 15,141 |
| Iron bars, tons. | 11,097 | 18,622 | 111,714 | 11,180 |

PERFECT PULLEYS.

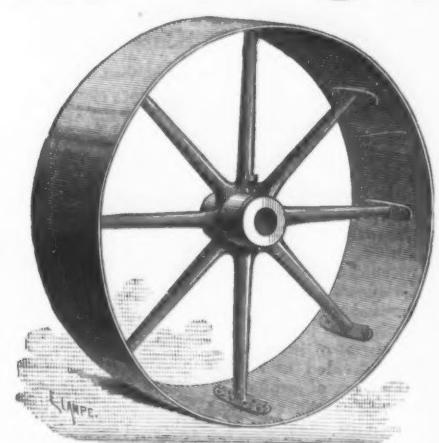


THE MEDART PATENT WROUGHT RIM PULEYS.

(Patented in the United States, England, France, Germany, Canada and Belgium)

THE LIGHTEST, STRONGEST, BEST BALANCED AND CHEAPEST IN THE WORLD.

In the market for four years, and over 150,000 now in use.



The following testimonials from some of the most prominent firms using our pulleys furnish proof of their excellent qualities:

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Meader Furniture Co., " "
Sextro Furniture Co., " "
L. Schreiber & Sons, " "
H. Closterman, " "
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Emerson, Fisher & Co., Cincinnati, Ohio.
Winchester & Partridge Mfg. Co., Whitewater, Wis.
Robt. W. Gardner, Manufacturer Gardner's Governor, Quincy, Ill.
Dueber Watch Case Mfg. Co., Newport, Ky.
Kentucky Malting Co., Louisville, Ky.

Winona Mill Co., Winona, Minn.
Davidson, Blount & Co., Evansville, Ind.
Hershey Lumber Co., Muscatine, Iowa.
Bloomington Furniture Mfg. Co., Bloomington, Ill.
Henry C. Yaeger, Mill, Kane, Ill.
F. H. Kump, Brewery, Kansas City, Mo.
Chouteau, Harrison & Valle Iron Co., St. Louis, Mo.
Shickle, Harrison & Howard Iron Co., St. Louis, Mo.
Harrison Wire Co., St. Louis, Mo.
Collier White Lead and Oil Co., St. Louis, Mo.
Rohan Bros.' Boiler Mfg. Co., St. Louis, Mo.
Manual Training School, Washington University, St. Louis, Mo.
Missouri Car and Foundry Co., St. Louis, Mo.
Adolphus Meier & Co., St. Louis Cotton Mills, St. Louis, Mo.
St. Louis and San Francisco R. R. Co., St. Louis, Mo.

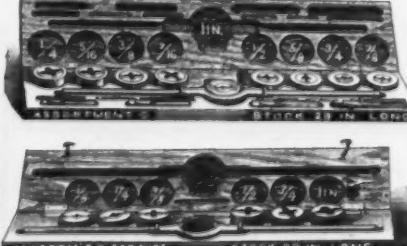
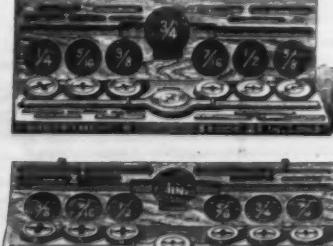
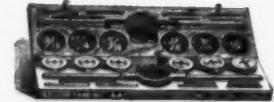
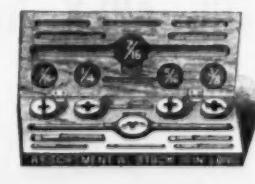
Excelsior Mfg. Co., Charter Oak Stoves, St. Louis, Mo.
Belcher Sugar Refining Co., " "
St. Louis Stamping Co., " "
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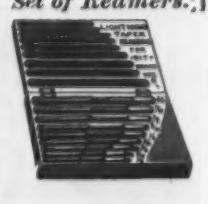
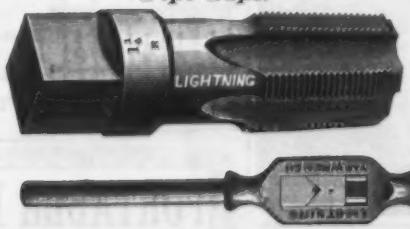
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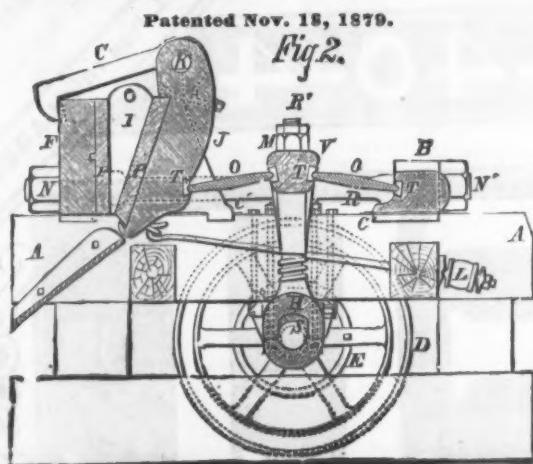
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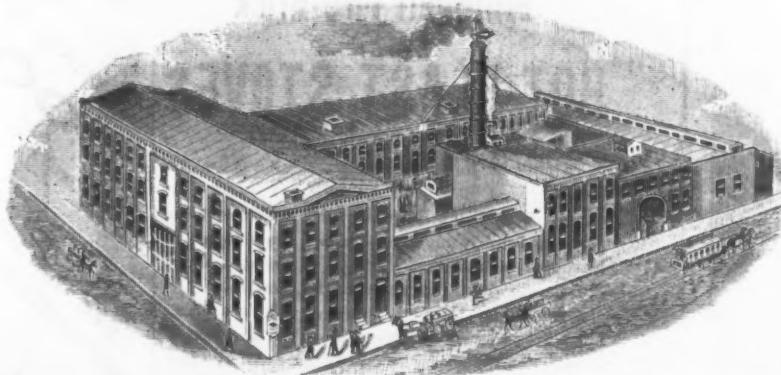
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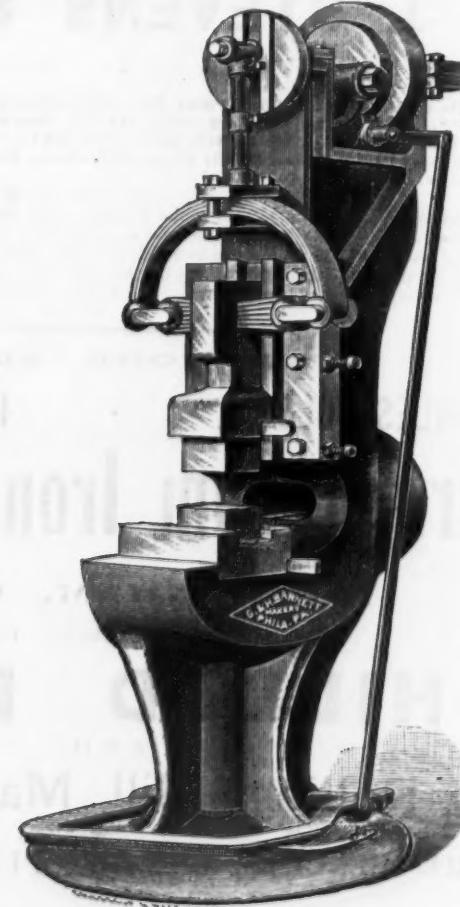
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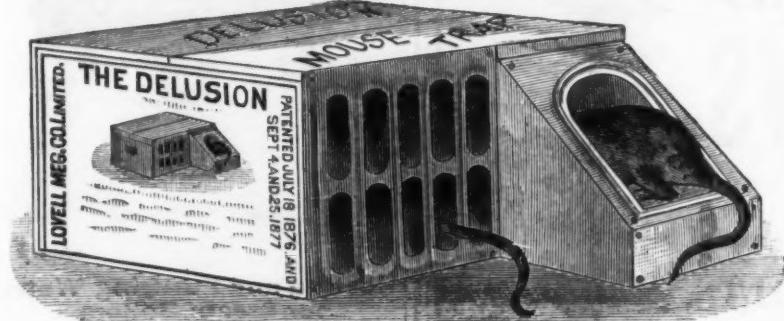
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And thinks he's out; but, bless his soul,
He's in a cage, somehow or other,
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Manufactured Exclusively by the LOVELL MFG. CO., Limited, Erie, Pa.

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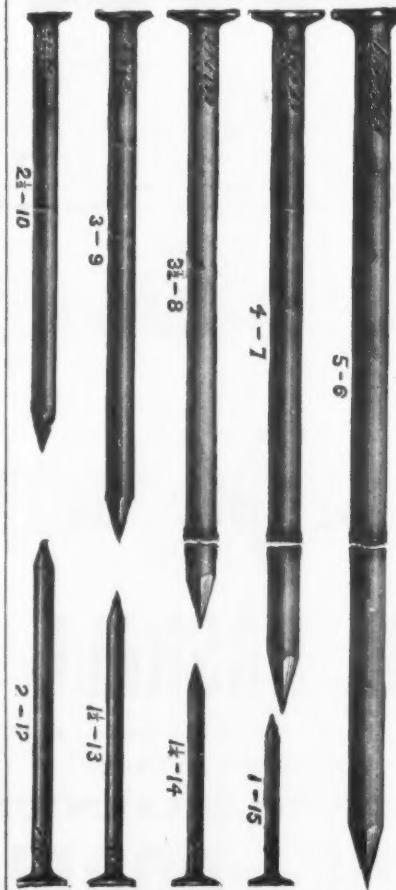
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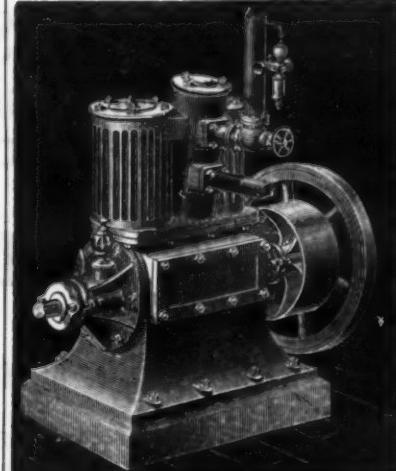
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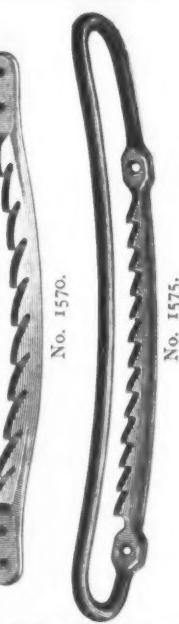
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TO THE TRADE.

GRAVITY SASH LOCKS.



Claim of Patent issued Sept. 4, 1883.

The improvement in Fasteners for the meeting rails of Window Sashes herein described, consisting of the base-plate provided with a rigid post, the sweep "C" journaled thereon and provided at its inner end with a pivoted latch, having a forwardly-extending arm which engages with a rigid notched or shouldered flange or plate, at the top of the post above the sweep, to lock the latter as described.

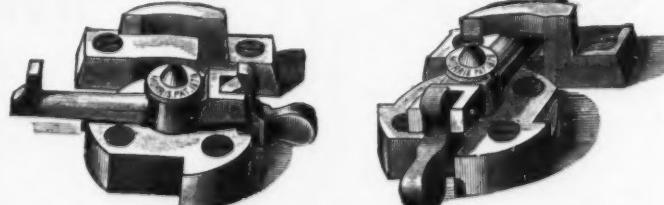
Having lately secured the rights of the Morris Sash Lock Manufacturing Co., we shall hold the said parties responsible for all injury done our business by them, and shall protect our customers to the fullest extent against all claims of infringement by said Morris Sash Lock Manufacturing Co.

Try our Gravity Sash Locks, as they are the best in the world.

THE KEMPSHALL MFG. CO.,

New Britain, Conn.

THE MORRIS SASH LOCK,



MANUFACTURED BY

THE MORRIS SASH LOCK MFG. COMPANY,
MANUFACTURERS OF
SPECIALTIES, BUILDERS' HARDWARE,
Cincinnati, Ohio.

SPECIAL NOTICE TO THE HARDWARE TRADE.

When we published our Circular to the Trade in August last, in reference to the Kempshall Gravity Sash Lock, no patent had been issued to the Kempshall Company. But to our surprise the Patent Office last month granted them a patent, under which they are claiming the right to make their Fasteners.

The application for this patent was made by one William E. Sparks, and we ask the Trade to note that the Patent Office, in acting upon it, wrote an official letter, on the 18th of last July, rejecting it on one Mr. Morris' patent of 1879, and saying:

"Morris, 92,487, Feb. 18, 1879, shows a Sash Lock which in every respect is equivalent to that shown and described in this (Sparks') application. It is considered a matter of no consequence that the latch engages with the notch in the bottom plate instead of a top plate, and it is held to be immaterial whether the locking notches are above or below the latch."

As the Patent Office in July thought the Kempshall Fastener the equivalent "in every respect," as they say, of the Morris Fastener, it will not be wondered at that we were surprised they should in September grant a patent for it.

We have determined to test the right of this Sparks-Kempshall patent to continue in existence, and we have therefore this week brought another suit against the Kempshall Company, under Section 4918 of the United States Revised Statutes, to have the patent declared void by the court, as being for substantially the same thing as our Mr. Morris' prior patent.

The Trade therefore will please take notice, and are respectfully requested to await the result of the litigation before being influenced by the Kempshall patent.

CINCINNATI, November 1, 1883.

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100 W. 12th St., Cincinnati, Ohio.

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259 & 261 Randolph St.,
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Manufacturers of all kinds of
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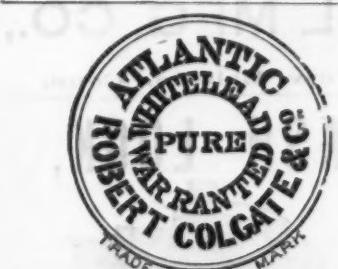


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Lock and support upper and lower
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Circulars give full instructions.

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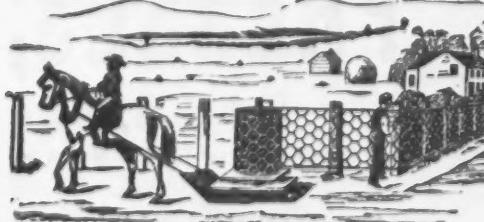
Georgetown, Conn.

Manufacturers of

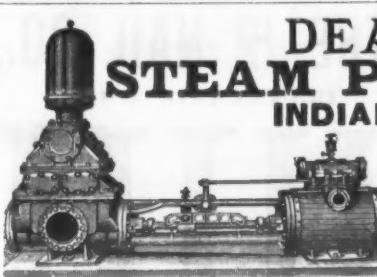
**Iron Wire, Sieves and
Wire Cloth,**

Power Loom Painted Screen Wire Cloth
GILBERT'S RIVAL AIR SIEVE,
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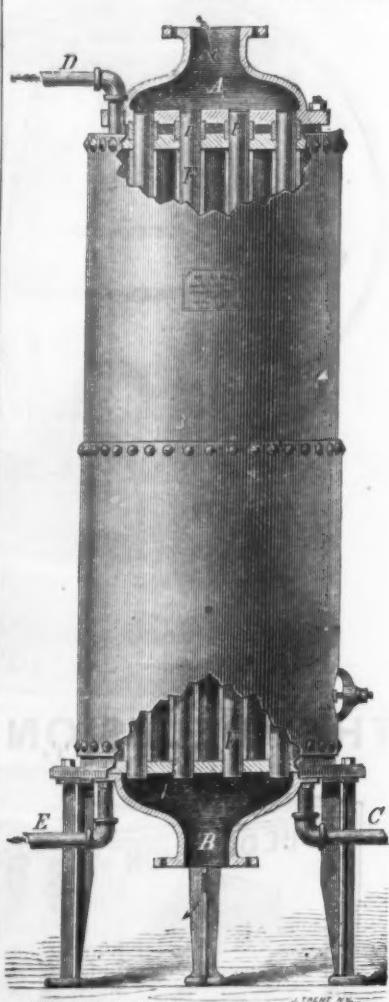
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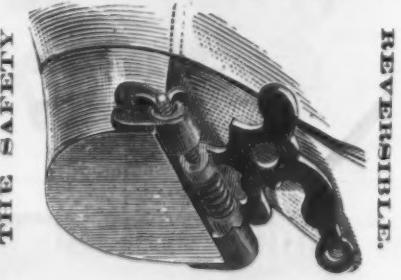
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(For Wholesale Metal Prices, See Page 18.)

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| Punches. | |
| Belt or Drive..... | \$ dos \$2.00; 2.31; 4.50, diso@50¢; |
| Bemis & Call Co.'s Cast Steel Drive..... | dis 50¢; |
| Bemis & Call Co.'s 8-in. Hinged Box..... | dis 50¢; |
| Spring & Call Co.'s 8-in. Hinged Box..... | * do \$7.00, dis 50¢; |
| Spring, Leach's Patent..... | dis 15¢; |
| Bemis & Call Co.'s Spring and Check..... | dis 40¢; |
| Sold. Timers..... | * dis 1.44, dis 40¢; |
| R. Sliding Door, Wrought Brass..... | 2.20, dis 33¢; |
| Sliding Door, Bronzed Wt. Iron..... | 2. foot 120, dis 35¢; |
| Sliding Door, Painted..... | * foot 24, dis 10¢; |
| Barra-Door..... | 1. 20, 2. 30, 3. 40; |
| Per 100 feet \$2.00 3.00 4.00-dis 10¢ | |
| R. D. for N. E. Hangers..... | Small. Med. Large. |
| Terry's Wrought Iron, 10¢ per foot..... | 2.70 .30 -ne- |
| Hairpins. | |
| J. R. Torrey Razors Co. | dis 15¢; |
| Razor Strips. | |
| Genuine Emerson..... | dis 15¢; |
| Badgers (not Emerson)..... | * dis 2.00, dis 22¢; |
| Emerson's Patent..... | dis 15¢ 2.5¢; |
| Hunt's..... | dis 15¢; |
| Chapman..... | dis 10¢; |
| Saunders'..... | dis 20¢; |
| Torrey's..... | 1. 15¢; |
| Iron and Tinned, new list, Dec. 10, 1881..... | dis 15¢; |
| In bulk, new list, Dec. 10, 1881..... | dis 15¢; |
| Copper Rivets and Burns..... | dis 10¢; |
| Rivets Metal..... | 2. 10¢ 20¢ 30¢ 40¢ 50¢ 60¢ 70¢; |
| Rods. | |
| tal. Brass..... | dis 25¢; |
| tal. Iron, Walnu'..... | do. \$1.00, dis 15¢; |
| Hollows. | |
| Bailey's (Stanley H. & L. Co.), new list..... | dis 20¢; |
| Stearns'..... | dis 20¢; |
| Sheaves and Spades. | |
| Griffiths..... | dis 25¢; |
| Old Colony..... | dis 25¢; |
| Green Shovel Co. | dis 25¢; |
| Hussey Binns & Co. | dis 25¢; |
| Arney Pettebone & Son, list Jan. 2, 1882..... | dis 25¢; |
| R. T. Pettebone, Pat. Shovels, new list..... | dis 20¢; |
| R. T. Pettebone, Pat. Scops, new list..... | dis 20¢; |
| Acme (Anti-Friction)..... | dis 50¢; |
| Acme Door, Sargent's list..... | dis 6.10 to 10.5¢; |
| Acme (Anti-Friction)..... | dis 50¢; |
| Rope. | |
| Hemp, list, November 12, 1880..... | dis 10¢; |
| Manila, 1/4 inch and larger \$1.10 1.50 2.00 | dis 15¢; |
| Manila, 3/4 and 1/2 inch \$1.10 1.50 2.00 | dis 15¢; |
| Manila, 1/4 to 1/2 inch \$1.10 1.50 2.00 | dis 15¢; |
| Manila, Hard Lathe Wires..... | dis 15¢; |
| Manila, Hay Rope..... | dis 15¢; |
| Boxwood, Ivory..... | dis 70¢ to 1.50; |
| Chapin's..... | dis 45¢ to 50¢; |
| Standard..... | dis 20¢ to 30¢; |
| Stanley..... | dis 10¢ to 20¢; |
| Stevens'..... | dis 15¢; |
| Cord & Irons. | |
| From 4 to 10. | dis 30¢ net; |
| Self-Heating. | |
| Self-Heating, Tailors..... | * dis 6.00, dis 10¢; |
| Gloves & Shield and Toilets..... | dis 25¢; |
| Mrs. Pott's Irons, Doubled Pointed..... | dis 35¢; |
| Mrs. Pott's Irons, Square Back..... | dis 35¢; |
| Enterprise Star Irons, new list, Jan. 1, 1882..... | dis 35¢; |
| Central Standard Irons, new list, Jan. 1, 1882..... | dis 35¢; |
| Chinese Laundry (N. E. Batt Co.)..... | dis 15¢; |
| New England..... | dis 15¢; |
| Sand Paper and Emery Paper. | |
| Baeder & Adamson's Sand Paper..... | dis 15¢; |
| Baeder & Adamson's Flint, 2. 25¢ 3. 50¢ 4. 75¢ | dis 15¢; |
| Baeder & Adamson's Star..... | 3.75¢ dis 15¢; |
| Baeder & Adamson's Emery..... | * rem 10¢ to 15.50¢; |
| Bartles Best Flint, Nos. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. | rem 4.50¢; |
| Bartles Best Flint, Nos. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. | rem 4.50¢; |
| Bartles Best Flint, Nos. 2 to 3..... | rem 5.00; |
| Bartles Best Flint, No. 3.6..... | rem 5.50 35¢; |
| Bartles Best Flint, All Nos. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. | rem 4.00; |
| Madison Flint, Plain..... | rem 3.50; |
| Bartles Emery Paper..... | * rem 6.50 to 11.00; |
| Bartles Emery Cloth..... | * rem 18.00 to 26.00; |
| Crocus Cloth..... | rem 18.00 @ 26.00; |
| New England, same list as R. & A. Flint..... | rem 3.5¢; |
| Guiney's..... | rem 3.5¢; |
| Steel Cut, common..... | * rem 15¢ net; |
| Patent. | |
| Silver Lake, Hemp..... | dis 50¢, dis 10¢; |
| Silver Lake, White Cotton..... | dis 50¢, dis 10¢; |
| Silver Lake, White Cotton..... | dis 50¢, dis 10¢; |
| Raw Hide, 2. foot, 34 in., 50. 55. 65. 75. 85. 95. 105. | dis 10¢; |
| Steel Ribbon..... | dis 10¢; |
| Cast Irons. | |
| Clark's, No. 1000; No. 2, \$3.00 per gross..... | dis 33¢; |
| Perkins'..... | dis 50¢; |
| Brayton's Burglar Proof..... | dis 35¢; |
| Walker's, New Window Sashings..... | dis 25¢; |
| Northup Window Springs, No. 1. \$10.00 \$ gross..... | dis 15¢; |
| "Common Sense," Japanned, Coppered and Bronzed..... | dis 15¢ to 20¢ net; |
| Common Sense, Nickel Plated, * gross 10¢ net | dis 10¢; |
| Common Sense, Nickel Plated, * gross 10¢ net | dis 10¢; |
| Crash Weight. | |
| Gold Eyes, in 20 lots and over..... | * dis 15¢; |
| Samson Stoppers or Fillers. | |
| Miles' Challenge..... | * dis 20¢; |
| Porter's, No. 15, No. 20, No. 25, No. 30, No. 35. | each \$1.00, dis 10¢; |
| Draw Cut No. 4..... | each \$1.00, dis 10¢; |
| Enterprise Mfg. Co. | dis 25¢; |
| Silver's..... | dis 25¢; |
| Scissors. | |
| Dixon's Circular, Mill and Cross Cut..... | dis 40¢; |
| Dixon's Hand, Panel, Rip, &c. | dis 40¢; |
| Dixon's Lightning, Cross Cut, new list..... | dis 40¢; |
| Boynton's Circular and Mill..... | dis 40¢; |
| Boyton's, for 100 feet..... | dis 25¢; |
| Boyton's Lightning Hand, Panel and Rip..... | dis 25¢; |
| Wheeler & Clemson Mfg. Co.'s Hand..... | dis 30¢; |
| W. M. & C. Mfg. Co. Circulars..... | dis 30¢; |
| Livingston's and Kitchen..... | dis 20¢; |
| Livingston's Framed Wood..... | dis 20¢; |
| Knives. | |
| No. 101 102 103 104 105. | dis 35¢; |
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| Peace Circuits and Mill..... | dis 40¢; |
| Peace Circuits, Panel and Rip..... | dis 40¢; |
| Peace Cross Cut..... | dis 35¢; |
| Peace Bands, all widths..... | dis 10¢; |
| Richardson's Circular..... | dis 40¢; |
| Richardson's Mill and Cut..... | dis 25¢; |
| Richardson's Hand Panel, Butter and Web..... | dis 25¢; |
| Saw Frames. | |
| White, Vermont..... | * dis 2.10¢, dis 24¢; |
| Red, Polished and Varnished..... | * dis 2.00, dis 10¢; |
| Saw Sets. | |
| Boynton's X Cut, per do \$1.00; Hand Saw per do... \$1.00 8.50 10.00 7.50 6.20 net. | |
| Stillman's, Imitation..... | dis 25¢; |
| Stillman's imitation..... | * dis 2.25¢, dis 20¢ to 5¢; |
| Common Lever..... | No. 1. \$1.00, No. 2. \$1.50, dis 20¢ to 5¢; |
| Leach's..... | No. 1. \$1.00, No. 2. \$1.50, dis 20¢ to 5¢; |
| Hamer's, Household..... | dis 20¢ to 5¢; |
| Hamer, Bemis & Call Co.'s new Patent..... | dis 20¢ to 5¢; |
| Bemis & Call Co.'s Lever & Spring Hammer..... | dis 20¢ to 5¢; |
| Bemis & Call Co.'s Plate..... | dis 10¢; |
| Bemis & Call Co.'s Cross Cut..... | dis 12.5¢; |
| Aiken's Imitation..... | \$1.00, No. 1. \$1.50, dis 25¢; |
| Aiken's Imitation..... | \$1.00, No. 1. \$1.50, dis 25¢; |
| Hart's Patent Lever..... | dis 20¢; |
| Dixson's..... | No. 1. \$1.50, No. 2. \$2.00, dis 20¢; |
| Morrill's..... | dis 20¢; |
| Hatch Counter, No. 171..... | * dis 2.00, dis 45¢; |
| Hatch, Tea, No. 161..... | * dis 1.00, dis 45¢; |
| Union Platform..... | dis 40¢; |
| Fairbanks'..... | dis 20 to 10 & 20. |
| Bell & Britton's..... | dis 20 to 20 & 30. |
| Buffalo Scale Co..... | dis 20 to 20 & 30. |
| Forsyth Scale Co..... | dis 20 to 20 & 30. |
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| Chatillon's Family Favorite..... | dis 20 to 20 & 30. |
| Family Favorit'..... | dis 20 to 20 & 30. |
| Scale Jars, List of January 12, 1882..... | dis 20¢ to 5¢; |
| Scrapers. | |
| Adjustable Box Scraper (S. H. & L. Co.)..... | dis 20¢ to 100¢; |
| Box 1 Handle..... | * dis 20¢; |
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| Porter's Pat Window and Door Frame..... | dis 20¢; |
| Screw Drivers. | |
| Douglas Mfg. Co..... | dis 20¢ to 100¢; |
| Dixon's Patent Excisor..... | dis 40¢; |
| Fiat Head Iron, having 1882 improvements, No. 1, \$2.00; No. 2, \$1.00; No. 3, \$1.50 per do..... | dis 20¢; |
| sergeant wa. | |
| Lester's Stock..... | dis 25¢; |
| Rogers, \$1.50..... | dis 25¢; |
| scissors and Scissors. | |
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| Pruning, Garden, Pruning Hooks and Shears, farm, Lamp Trimmers..... | dis 20¢ to 50¢; |
| Tinners' List, Dec. 1881..... | add 5¢, dis 10¢ to 50¢; |
| Heimach's, List, Dec. 1881..... | dis 10¢ to 50¢; |
| Baldwin's Fallows, shear..... | dis 10¢; |
| Mass Cutlery Co. St. Trimmers..... | dis 75¢; |
| Cast Steel Trimmers..... | dis 80¢; |
| Wise, J. & Sons' Hat, Dec. 1881..... | dis 10¢ to 50¢; |
| Wise, J. & Sons' Tailors' Shears..... | dis 50¢ to 50¢; |
| Wrenches. | |
| American Adjustable..... | dis 45¢; |

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| Baxter's Adjustable "B," | dis 33¢; | Wringers. | Per do. |
| Baxter's Diagonal. | dis 35¢; | Universal, XX, No. 24. | 12.00 |
| Cooper's "Mechanic." | dis 30¢; | Universal, XX, No. 14. | 11.00 |
| Cox's "Pattern, Malleable." | dis 75¢; | Universal, XX, No. 1. | 6.00 |
| Giles' Pattern. | dis 60¢; | Peerless, no Cogs, No. 1. | 12.00 |
| Giles' standard. | dis 60¢; | Peerless, with Cogs, No. 2. | 15.00 |
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| Bemis & Call's Merrick's Pattern. | dis 35¢; | Eureka, No. 2. | 12.00 |
| Bemis & Call's "Ginder or Gas Pipe." | dis 40¢; | Novelty No. 2, for Common Tubs. | 12.00 |
| The Favorite Pocket (Bright). | dis 24¢; | Novelty No. 3, for Common Tubs. | 12.00 |
| Webster's Patent Combination. | dis 24¢; | Excisor No. E, for Stationary Tubs. | 12.00 |
| Taylor's Farmers'. | dis 24¢; | Excisor No. F, for Stationary Tubs. | 12.00 |
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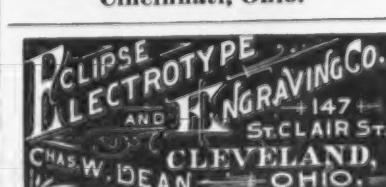


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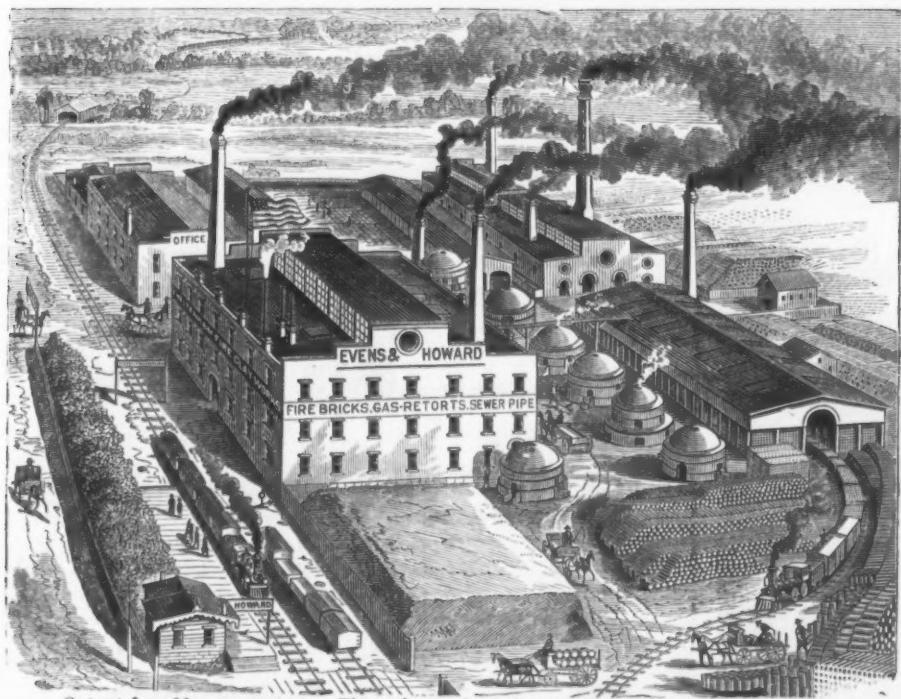
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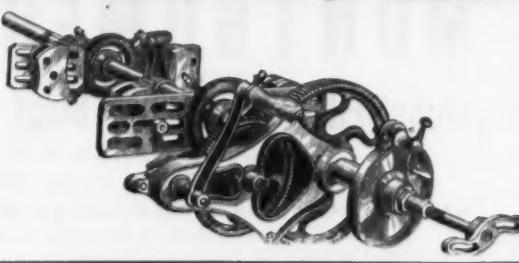


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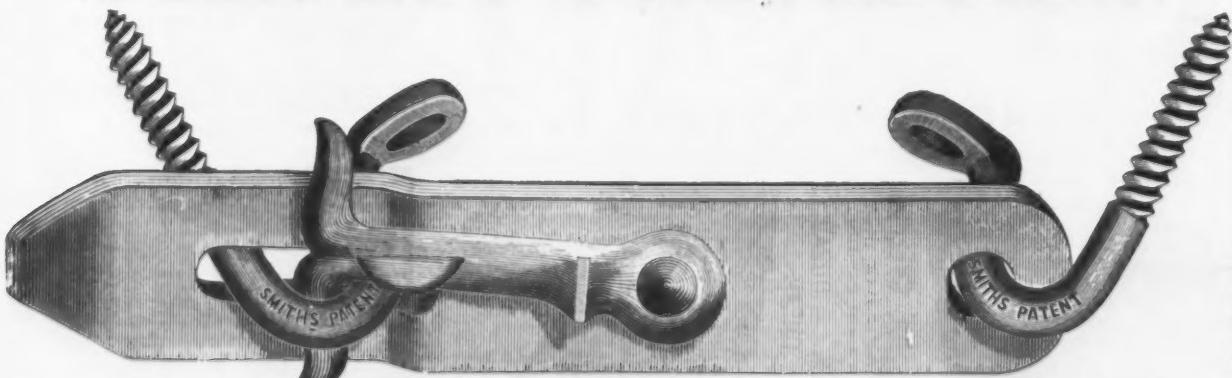
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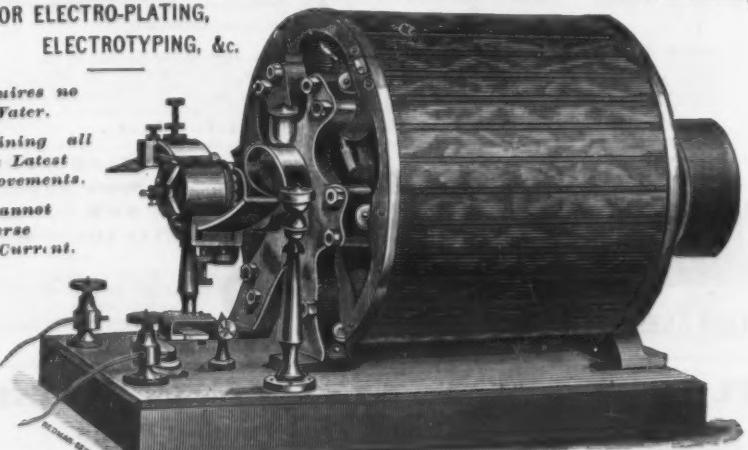
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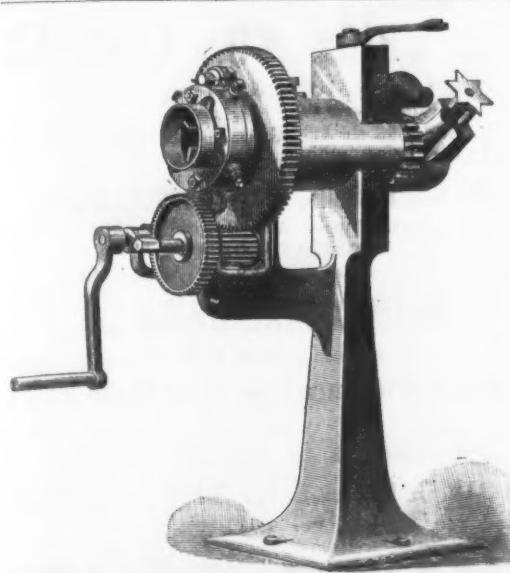
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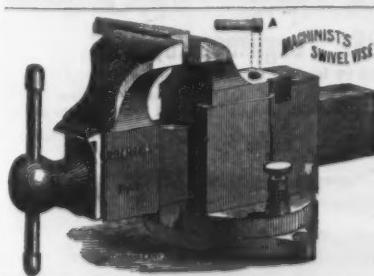
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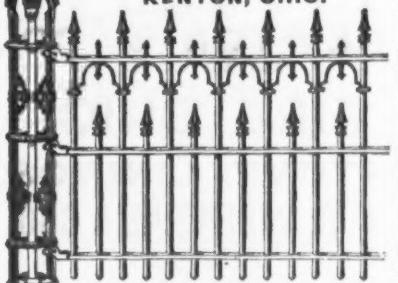
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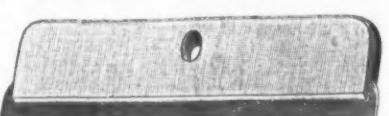
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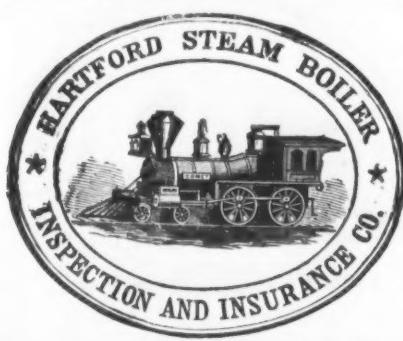
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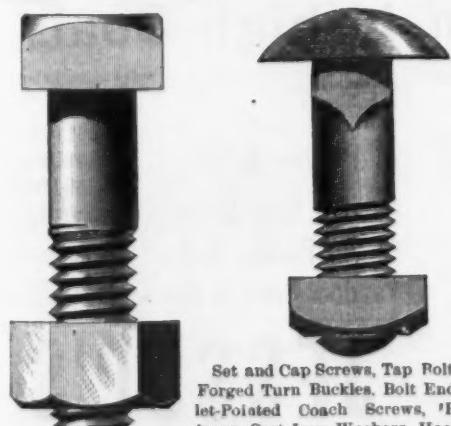
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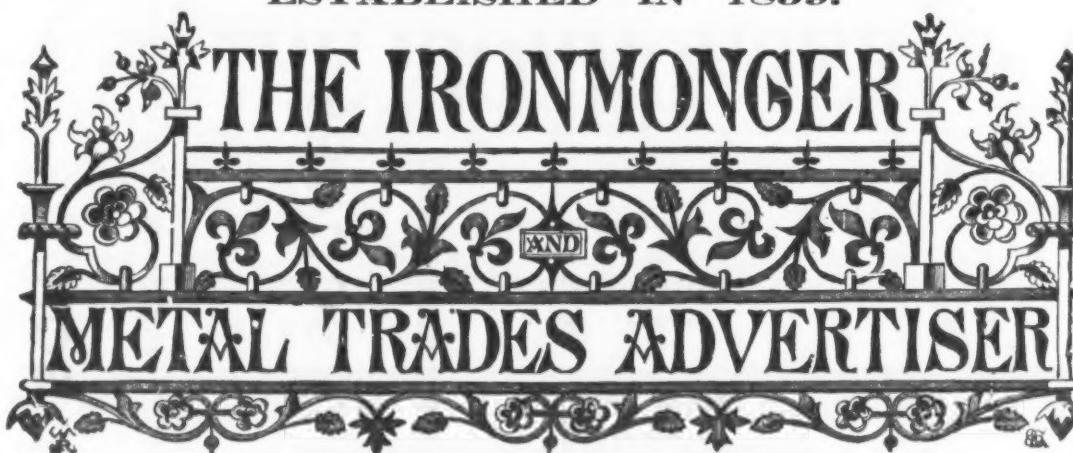
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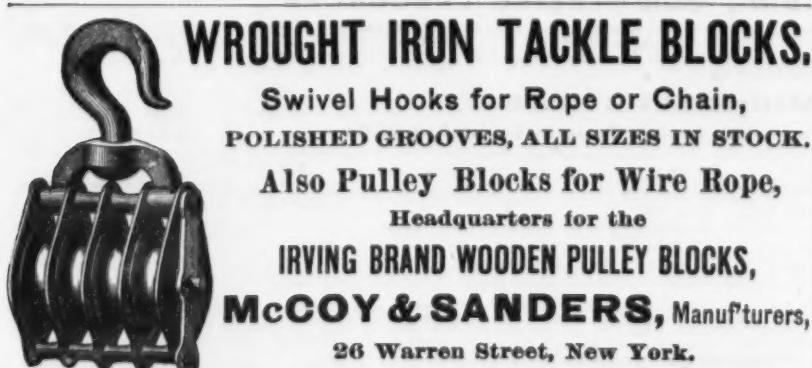
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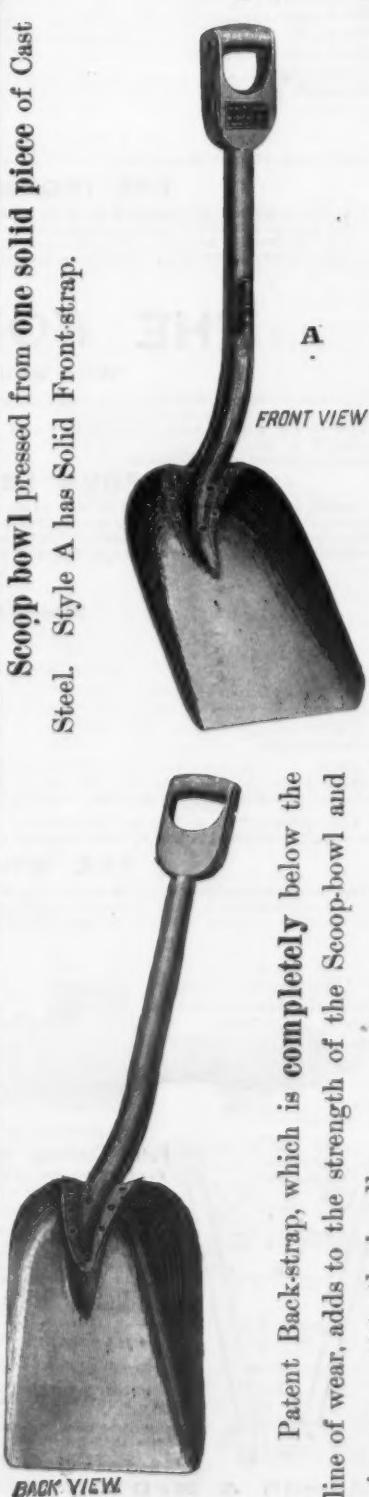
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No Straps to catch; no Straps to interfere; no Straps to tear off.
We use Best Materials Only in their manufacture, and fully warrant every Scoop. For Price Lists,
&c., apply to



Patent Back-strap, which is completely below the
line of wear, adds to the strength of the Scoop-bowl and
gives support to the handle.

NEW ENGLAND BUTT CO.,

MANUFACTURERS OF

DRILLED CAST BUTT HINGES,

AND

"CHINESE" LAUNDRY IRONS, SAD IRONS, &c.

These "Chinese" Laundry Irons are of
superior quality, made from the best pig
iron, highly finished, and rounded on
edges, having Wrought-Iron Handles, with
neatly molded Tops of Cast Iron.

The Three Sizes, Nos. 1, 2 and 3,
correspond in Weight with 4, 5 and
7 lb. Sad Irons.

NEW YORK OFFICE:
99 Chambers St.
FACTORIES: Providence, R. I.

DETROIT FILE WORKS,
DETROIT, MICH.

THE LARGEST HAND FILE WORKS IN THE U. S.

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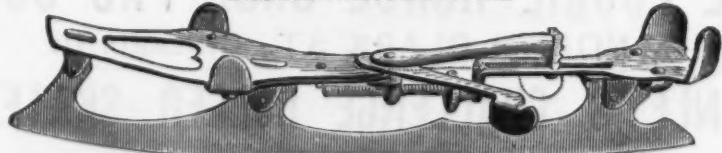
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(Patented April 10, 1881.)

EUREKA CLUB SKATE.

SMITH, SELTZER & CO., Philadelphia, Sole Agents for the State of Pennsylvania.
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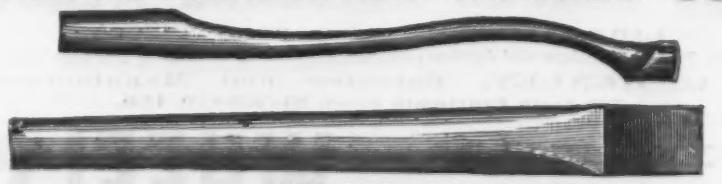
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MECHANICS' TOOLS, GENERAL HARDWARE.
Light and Heavy Steel Ladies a Specialty.

HOUSE FURNISHING GOODS
AND
Shoemakers' Tools.

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V. G. HUNDLEY,
PROPRIETOR OF
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MANUFACTURER OF
Handles and Spokes.
79 Reade Street and 97 Chambers Street,
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HARDWARE COMMISSION MERCHANT.

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BELLOWS AND FORCE MANUFACTURER,

S5 & S7 Columbus St.,
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PHILADELPHIA.

*Corrosed Weekly by Lloyd, Supplies & Watson.)
Terms, 30 days. For 60 or 90 days, interest added at 10%
per cent. per annum.*

Anvils.
Peter Wrights, F. D. 11 @ 11 1/2
Overton 10s. 10 1/2
Trotton. 10 1/2
Eagle Anvils, American, inc. 12 1/2
Apple Parers.
Globe Apple Peasers. 8 1/2 net
Penn Apple Parers. 8 1/2 net
Lots of 10 to 25 dozen special prices

Axes.
Kent's Kentucky and Yankee, per doz. 8 1/2 @ 9 1/2
Robert Mann. 8 1/2 @ 9 1/2
Richland Chief. 8 1/2 @ 9 1/2
Beveled Axes. 8 1/2 net
Double Bit Axes. 8 1/2 @ 9 1/2

Augers and Auger Bits.—New List January 7, 1880.
Bated Nut Augers. 10 1/2 @ 10 1/2
Cone's Augers. 10 1/2 @ 10 1/2
Watson's Ship Augers. 10 1/2 @ 10 1/2
Benjamin Pierce Auger Bits. 10 1/2 @ 10 1/2
Griswold Auger Bits. 10 1/2 @ 10 1/2
Cook's " " 10 1/2 @ 10 1/2
" " " " 10 1/2 @ 10 1/2
Bonney's Pat. Hol. Augers, list \$10 1/2 doz. 10 1/2 @ 10 1/2
Stearns' Hol. Augers, list \$10 1/2 doz. 10 1/2 @ 10 1/2

Balances.
Lights and Common. dis 33 1/2 %

Bells.
Baldwin Bros. Mfg. Co. Light Hand Bells. dis 7 1/2 to 10
Swiss Pattern Hand Bells. dis 7 1/2 to 10
Connell's Door Bells. dis 10 1/2 to 12
Gt. Western & Kentucky Cow new list. dis 6

Boring Machines
Upright, without Augers. List 5 1/2
Angular, without Augers. 5 1/2 @ 10 1/2

Belts.—Eastern Carriage Belts. dis 50 1/2 to 55
Philadelphia. new list 50 1/2 to 55
Stanley Wrought Shutter. dis 50 1/2 to 55

Braces.—Barber's. dis 50 1/2 to 55
Stanley. dis 50 1/2 to 55
Spofford. dis 50 1/2 to 55
American Mail. dis 50 1/2 to 55

Gunts.—Cast Fast Joint, Narrow. dis 40 1/2 to 50
Cast Loose Joint, Narrow. dis 40 1/2 to 50
" " Broad. dis 40 1/2 to 50
" " " " dis 40 1/2 to 50
" Acorn, Loose Pin. dis 40 1/2 to 50
" " Jap'd. dis 40 1/2 to 50
" " Meyer's Loose Joint. dis 40 1/2 to 50
Wrought Loose Pin. dis 40 1/2 to 50
" " " " dis 40 1/2 to 50
" " Loose Fast. dis 40 1/2 to 50
" " Loose Joint. dis 40 1/2 to 50

Blind Buttons.
Parke. dis 70 1/2 %
Clark. dis 70 1/2 %
Shepard. dis 70 1/2 %
Lull & Porter. dis 70 1/2 %
Huffer's. dis 70 1/2 %

Chains.—German Halter and Coll. list December 31.
1880. dis 50 1/2 to 55
Galvanized Plate. dis 50 1/2 to 55
Best Proof Coil Chain—English. dis 50 1/2 to 55
" " 12 8 1/2 7 1/2 6 1/2 5 1/2 gold. 5 1/2 @ 10 1/2

Chisels.—Socket Framing. dis 50 1/2 to 55
Rocket Firmer. dis 50 1/2 to 55
Butcher's. dis 50 1/2 to 55

Casters.—Bed (new list July 1, 1880). dis 40 1/2 to 50
Plate. dis 40 1/2 to 50

Collars—Box and Side. dis 50 1/2 to 55
Enterprise. dis 50 1/2 to 55

Cutlery.—Walton Pocket. new list net
Penknife. new list net
Landers, Frary & Clark, J. Russell & Co., Lamson &
Goodnow Mfg. Co. and Meriden Cutlery Co., Manu-
facturers' offices net

Cross Knives. dis 70 1/2 %

Adjustable Handles. dis 70 1/2 %

Fry Pans. dis 45 1/2

Tinned. dis 45 1/2

2 doz. \$3.00 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50 8.00 8.50

" " 1 2 3 4 5 6 7 8

Unfinished. dis 40 1/2 to 45 1/2

2 doz. \$3.00 3.75 4.35 4.75 5.25 5.80 6.00 7.00 8.00 8.50 9.00

For. 0 1 2 3 4 5 6 7 8

Chisels. dis 40 1/2 to 50 1/2

Box and Side. dis 50 1/2 to 55 1/2

Wedges. dis 50 1/2 to 55 1/2

Wrapping Irons. dis 50 1/2 to 55 1/2

Wrenches. dis 50 1/2 to 55 1/2

1 inch, Nos. 13 and 14. 3.75

" " 11 and 12. 3.75

" " 10 and 11. 3.75

" " 9 and 10. 3.75

" " 8 and 9. 3.75

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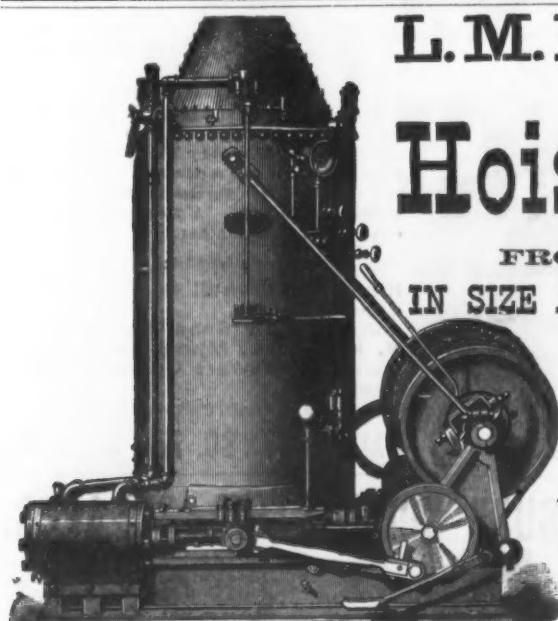
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Hoisting Engines

FROM 4 TO 50 HORSE POWER,

IN SIZE AND STYLE TO SUIT REQUIREMENTS.

SPECIAL COAL-HOISTING ENGINES

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Patentees and Manufacturers
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Emery Wheel Machinery and Tools a Specialty.

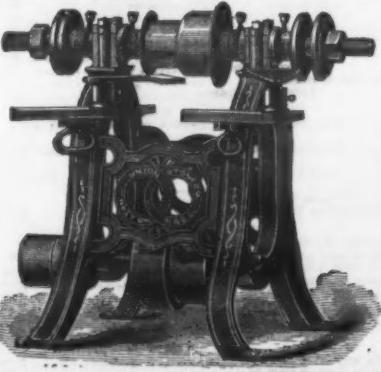
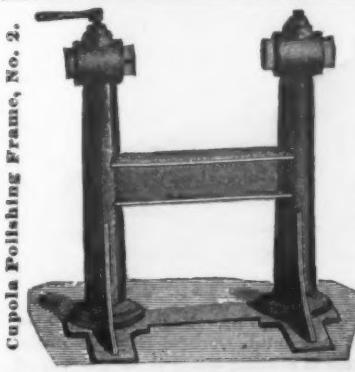
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Wood Polishing Wheels,

EMERY, QUARTZ, CORUNDUM.

GRINDERS' AND POLISHERS' SUPPLIES.

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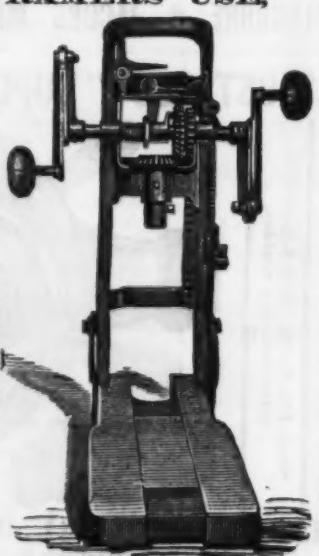


Cupola Polishing Frame, No. 2.

SAUNDERS' PATENT AUTOMATIC BORING MACHINES FOR BUILDERS' AND FRAMERS' USE,

are universally acknowledged to be superior to all other Boring Machines, and we guarantee to give better satisfaction than any other machine.

Ship Builders, House Builders, Dock Builders, Bridge Builders, Carpenters and Farmers please notice what we claim for our machine, and we guarantee all that we claim: First, that it will do nearly double the work of any other machine in the same length of time, with greater ease to the operator; that we can regulate the speed of the bit according to the size of the same, or to suit the operator; it will drive the bit any required speed; it will drive the bit or auger to any required depth, and the bit or auger returns from the hole by the same automatic motion without the operator stopping the machine; at the same time clearing itself and leaving the hole entirely free from chips; it is gauged to bore such a depth as may suit the operator, boring two or more holes at exactly the same depth after being once set, without any attention from the operator; it is an angular machine and will bore on any angle; it is the most compact machine; it can be placed in so small a compass as to occupy but little room in a carpenter's tool chest, and while in this compact form it can be carried in the hand with the greatest ease and convenience; it is the only reliable machine from the fact that we use the best material in its construction and each part can be duplicated in case of accident by sending directly to us. We finish the ironwork with a baked or heated Japan finish, which enables it to withstand all kinds of weather, the woodwork being rubbed in oil and shellac. They are the cheapest Boring Machines in the world for what they can do. We are introducing the Gladwin Improved Auger in connection with this machine. This auger is the best Boring Machine Auger made, being a tool-clearer in gummed or knotty wood. We offer the Borer, boxed and delivered on board cars, for \$6. with full set Gladwin Improved Augers, 18 qu., \$9.; or with extra finished beds, \$6.50, and full set augers, 18 qu., \$9.50. A discount given for large orders. Send for Descriptive Catalogue.



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Successors to Milo Peck, Manufacturers of

PECK'S DROP PRESS

PECK'S DROP LIFTER is the only one which has its parts cushioned. Being thus cushioned they are the most durable lifter in the market.

Can be attached to any drop now in use.

Send for Illustrated Catalogue.

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No. 1 Carries 7 feet earth.
No. 2 Carries 5 feet earth.
No. 3 Carries 3½ feet earth.

PATENTED
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Steel Scraper

The Lightest and Strongest Scraper made. The body is made of one single piece of steel. The handles are fastened inside of fold, and free from all obstructions. The body, ball and runners are all made of steel. Especially suited for contractors. Send for circulars. Manufactured by

THE YORK MFG. CO. Limited Portsmouth Ohio.

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Celebrated

METALINE
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Improved Sleeve Roller
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Also a full line of every variety of
TACKLE BLOCKS.

Try Us with a Sample Order.

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IMPROVED SNATCH BLOCK.

THE REIHER SELF-LOCKING IMPROVED TRANSOM LIFTER

A represents the Stationary Locking Bar; B the Self-Locking Adjusting Block; C the Operating Rod; D the Lower Bracket; E the Lifting Arm; F the Transom Bracket.

With this Adjustable Locking Bar and Lifting Arm, the opening of the transom can be made larger or smaller without the least inconvenience.

Regular Sizes of
Lifters for the Trade:
¾ in., 5½ in. and 9½ in.

Duplicates of Arm E,
in different lengths, fur-
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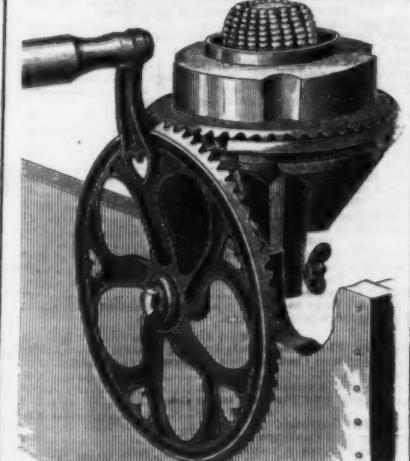
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AGENTS WANTED.

If no agent in your vicinity, I will send Sheller, express paid, on receipt of price.

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The constantly increasing Sales of this Injector attests its Superiority as a Boiler Feeder.

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Reversible, Self-Sharpening and Other

HORSE CLIPPERS

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BARBER CLIPPERS.



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Buckled Knives Wood's, Lap Bolster.....dis 30 %
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Lap Bolster, Oval Handle.....dis 20 %
Sticking.....dis 20 %
Skinning.....dis 20 %
Butcher, Common Round Handle, Wood's.....dis 20 %
Shoe Knives, Wood's.....dis 20 %

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Dog Springs—Torrey's Rod.....\$ dis 50 %
Imitation Coil, new list.....\$ dis 50 & 10 %
Crown.....\$ dis 1.25
Warner's.....\$ dis 2.00

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Drills—Morse Bitt Stock.....\$ dis 33 1/2 %
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Emery—Wellington Mills.....\$ dis 100
Walpole Emery Mills.....\$ dis 100
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Enamel Pig Vase.....Standard Mfg. Co. Kettles.....dis 50 %
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Files—American File Co.dis 40 %
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Pierce's.....\$ per dozen \$1.00

Glass Cutters—Combination Glass Cutter and
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Hangers & Rollers.—Anti-Friction.....dis 40 %

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Underhill.....dis 30 %

Hay & Hayrake—Lightning.....\$ dis 100, net
Fisher's Patent.....\$ dis 100

Hinges—Strap and T (new list).....\$ dis 100 %

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Hooks and Staples—Brewers (new list).....\$ dis 50 %

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1/2 in., \$ dis 20 %

1 in., \$ dis 18 %

1 1/2 in., \$ dis 17 %

Ice Cream Freezers—Packer's, new list.....\$ dis 50 %

Knobs—“Norwalk.” New list.....\$ dis 50 & 25 %

Silver Glass.....\$ dis 50 & 25 %

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12 in. cut.....each \$8.50

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Eagle Cabinet.....\$ dis 25 %

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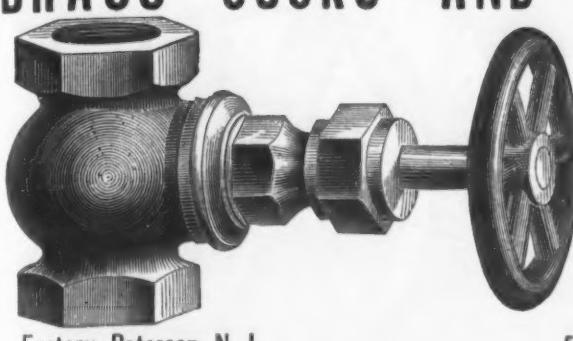
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MANUFACTURERS OF
BRASS COCKS AND VALVES,
For STEAM,
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ALL KINDS OF
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Agents for **BUNDY'S RADIATORS.**

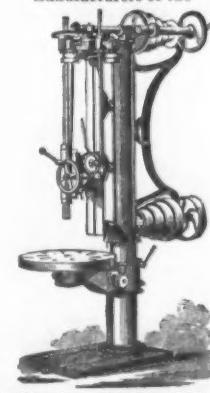
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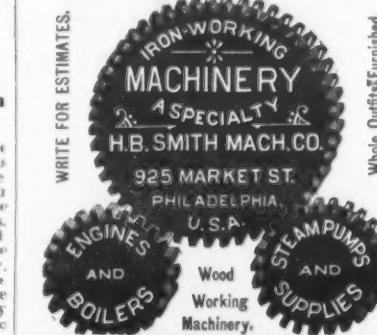
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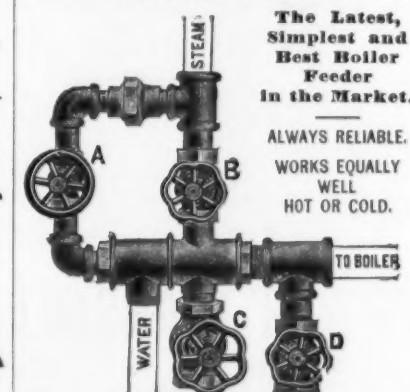
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WORKS EQUALY
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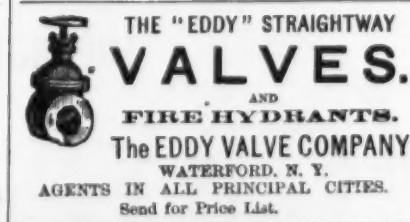
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FIVE SIZES.
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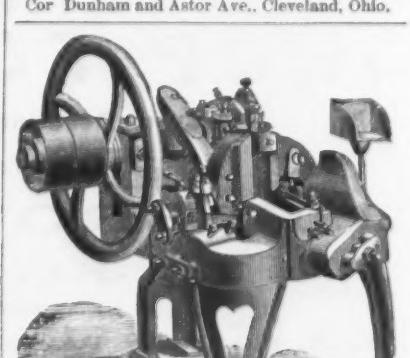
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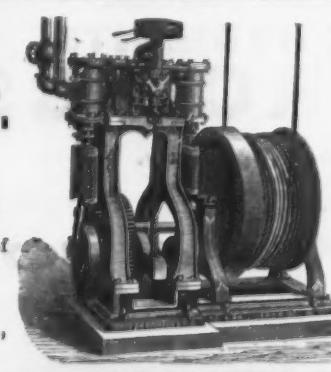
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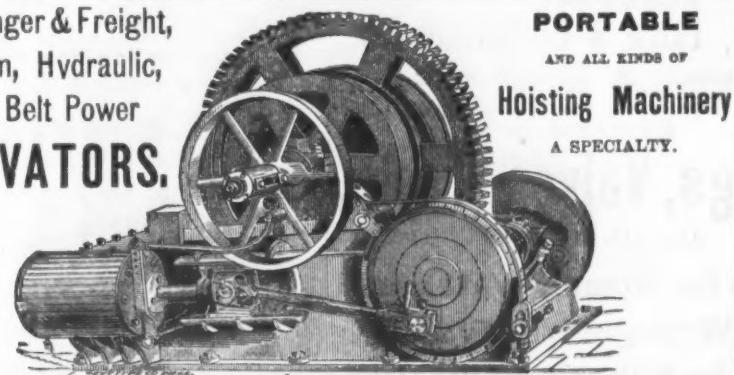
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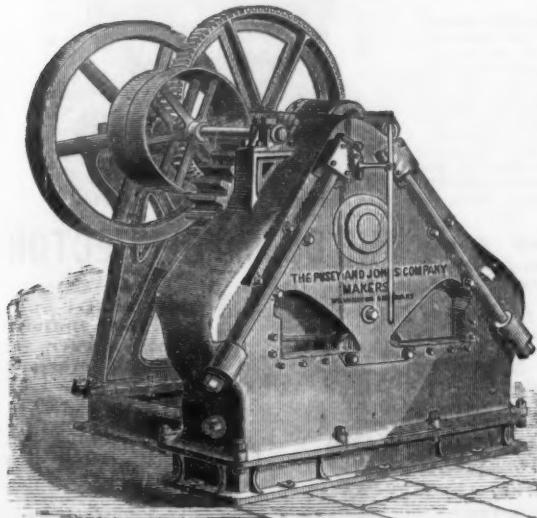
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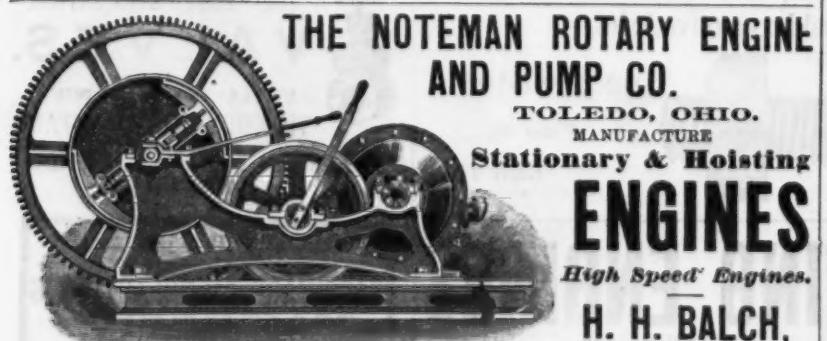
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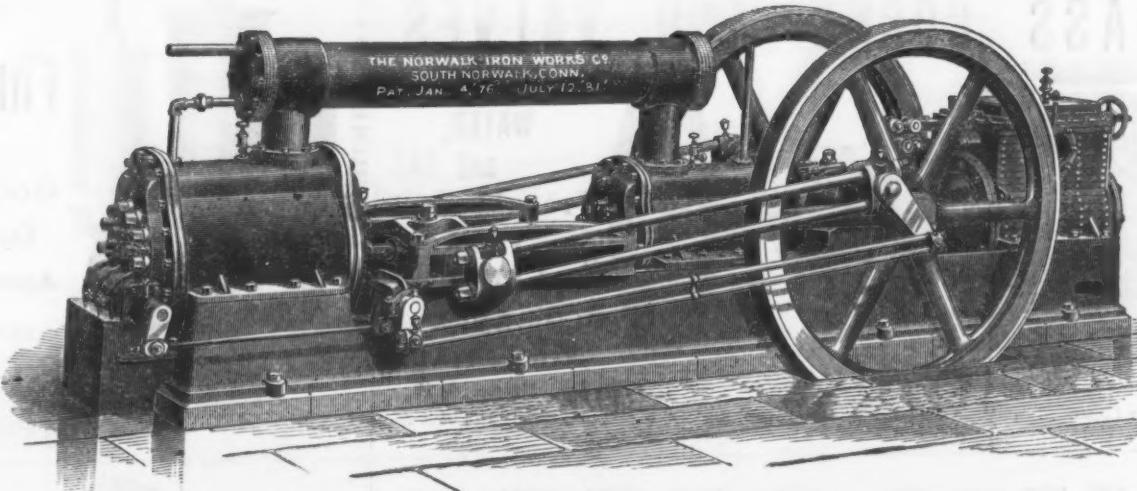
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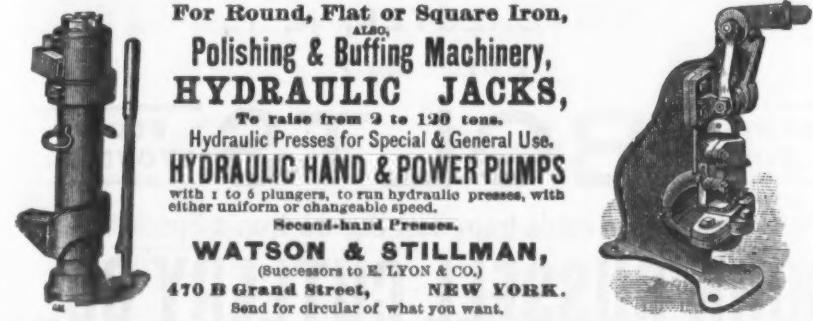
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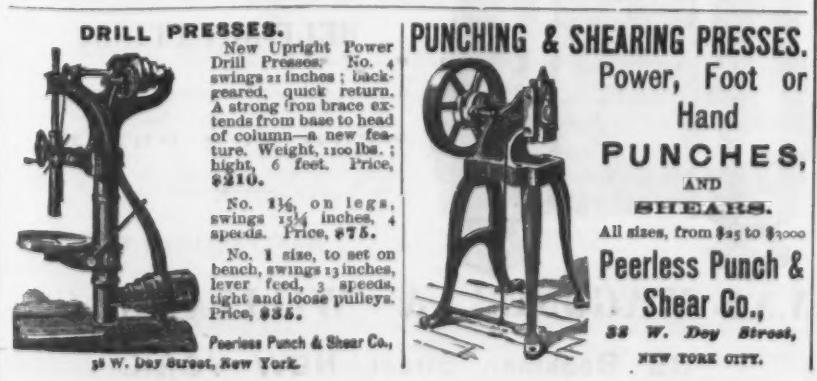
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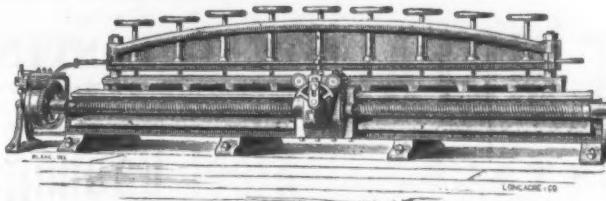
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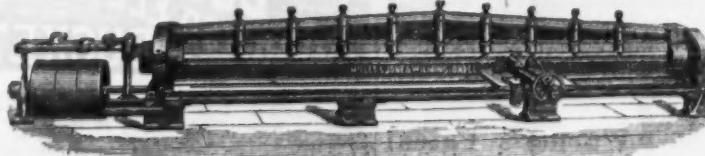
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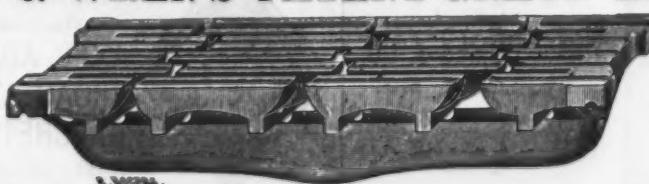
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